

ON TIME AND ON BUDGET:

A RESPONSE TO DIGITAL TECH CONSULTING, INC.'S MARCH 2016 PRESENTATION ON THE STATE OF BROADCASTER RELOCATION RESOURCES

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TABLE OF CONTENTS

EXECUTIVE SUMMARY.....	1
I. THE <i>ON TIME, ON BUDGET</i> STUDY ANALYZED SIGNIFICANT DISCONNECTS BETWEEN VERIFIABLE BROADCASTER-SUBMITTED DATA REGARDING THE TRANSITION AND ASSERTIONS THAT DTC OFFERED BASED ON INFORMAL, UNVERIFIABLE ESTIMATES.....	4
A. The <i>On Time, On Budget</i> Study Determined That Structural Engineering Resources Will Not Delay The Repacking Based On Several Undisputed Facts	5
B. Negotiations With Tower Owners And The Channel Changing Capabilities Of Shared Antennas Will Not Delay The Repacking Process.....	9
C. The <i>On Time, On Budget</i> Study Took Into Account The Interdependent Nature Of Several Broadcaster Relocation Activities When Estimating That Broadcasters Can Meet The FCC’s Deadlines.....	10
D. Recent FCC Rule Changes Will Expedite The Building And Zoning Permit Application Process	13
E. The <i>On Time, On Budget</i> Study Provided Compelling Evidence That Antenna Manufacturers Can Meet The Increase In Demand For Antennas Following The Incentive Auction	15
F. T-Mobile Has Proposed A Plan To Address Market And Regional Considerations For The Repacking Process	16
G. Broadcasters Can Prepare For The Post-Auction Relocation Process	16
II. THE <i>ON TIME, ON BUDGET</i> STUDY ACCURATELY ASSESSED THE NUMBER OF ANTENNAS BROADCASTERS WILL NEED TO REPACK	18
A. The <i>On Time, On Budget</i> Study Accurately Estimated The Number of Stations Likely to Change Channels.....	18
B. DTC Agrees That A Significant Number Of Stations Can Reuse Their Existing Antennas On New Channel Assignments.....	19
C. The Supply Of Auxiliary And Temporary Antenna Systems Will Not Delay The Repacking.....	22
D. The <i>On Time, On Budget</i> Study’s Conclusion That Broadcasters Can Repack On Schedule Did Not Depend On Antenna Sharing.....	24
E. Most Broadband Antennas Can Be Reused Without Materially Changing A Station’s Antenna Pattern.	25
III. THE ANTENNA MARKETPLACE IS THRIVING AND EAGER TO SUPPLY INCREASED DEMAND.....	28
IV. THERE ARE ENOUGH SKILLED TOWER CREWS AVAILABLE TODAY TO COMPLETE THE REPACKING PROCESS ON TIME	31

A. DTC’s Reasons For Disqualifying Certain Tower Firms Are Invalid	31
B. Even By DTC’s Own Count, There Are Enough Tower Climbing Resources To Meet The FCC’s Repacking Deadline.....	34
C. The Supply Of Tower Climbing Resources Will Only Grow	41
V. THERE ARE ENOUGH QUALIFIED RF CONSULTING ENGINEERS AND OTHER CONSULTANTS AVAILABLE TO COMPLETE THE REPACKING PROCESS ON TIME	43
A. Adequate RF Consulting Engineers Are Available To Complete The Repacking Process On Time.....	43
B. More Than Enough Structural Engineers Are Available To Assist With The Repacking Process.....	46
VI. TRANSMITTERS WILL COME IN ON TIME AND WITHIN BUDGET	49
CONCLUSION	51
Appendix A – UHF Broadband Antenna Capability Data.....	53
Reformatted Appendix G	57

EXECUTIVE SUMMARY

The 600 MHz incentive auction promises consumers greater access to a wealth of mobile broadband services, including improved healthcare, education and transportation. But the spectrum capacity needed to help satisfy exploding consumer demand will not become available until the television incumbents that are slated for relocation exit the 600 MHz spectrum.

Working in partnership with William F. Hammett and Rajat Mathur of Hammett & Edison, Inc. and Jack Boone of Broadcast Tower Technologies, Inc., we developed the first data-driven analysis of the feasibility of a timely and cost-effective relocation process.¹ Unlike prior submissions that had relied on subjective estimates and appraisals, our February 2016 study synthesized detailed, station-specific data that auction-eligible broadcast licensees submitted to the FCC under penalty of perjury using FCC Form 2100, Schedule 381. We aggregated and processed this data as part of our 412-page report and then compared the broadcaster-verified station data against the output of the FCC's incentive auction studies to calculate total aggregate demand for broadcast relocation resources following the 600 MHz incentive auction. We also added a qualitative dimension to the report by conducting personal interviews with scores of broadcast tower climbing firms, antenna manufacturers and structural engineers. We then relied on the full sequence of relocation events that broadcasters had described to project the aggregate cost and cumulative timing of the 600 MHz relocation process. While addressing all aspects of the transition process, our analysis focused on the most meaningful contributors to the expense and time necessary to transition the 600 MHz band and frequently used worst-case assumptions about both the duration of the activity and its cost in light of the list of available industry resources. Taking all of these factors into account, we determined that broadcasters could readily complete the relocation process within 39 months and for less than \$1.75 billion. The additional cost and time savings made possible through greater-than-estimated broadcast clearing, new vendors entering the market and other factors only lent additional confidence to our worst-case analysis.

The National Association of Broadcasters disagreed with our conclusions and commissioned Digital Tech Consulting, Inc. ("DTC") to respond to the *On Time, On*

¹ See *On Time and On Budget: Completing the 600 MHz Incentive Auction Repacking Process within the FCC's 39-Month Relocation Deadline and the Budget Established by Congress (Feb. 17, 2016)* ("On Time and On Budget").

Budget study.² DTC did not address the comprehensive analysis of the broadcaster-verified data that we submitted. Nor did DTC respond to the inaccuracies in its original filing that our *On Time, On Budget* study documented. Instead, DTC relied on its own estimates and discussions with unidentified industry-watchers to assert that the data broadcasters submitted to the FCC under penalty of perjury was replete with error. Subject to a handful of exceptions, DTC did not identify the ostensible errors in the broadcaster-submitted data. These omissions make DTC's estimates nearly impossible to validate. DTC also developed new subjective cost and timing estimates based on what it characterized as material omissions from the *On Time, On Budget* study. Finally, DTC used anecdotal reports from an uncertain number of telephone interviews to question the capabilities of many of the broadcast-industry suppliers we identified.

In this study, we review and expand upon our initial analysis of broadcast-industry demand for relocation resources against the ability of broadcast vendors to supply the goods and services broadcasters require within 39-months and under \$1.75 billion dollars.

Part I analyzes the timing considerations associated with the 600 MHz broadcast transition. We explain how our initial analysis accounted for the time required for negotiations with tower owners and local zoning approval as well as the potential for dynamic interactions among phases of the transition. We also review how the recent liberalization of tower-siting rules as well as the potential for waivers in extraordinary cases promise to further accelerate the transition process. Taken together, our end-to-end analysis of the broadcast television operating environment reveals a favorable foundation for concluding the post-auction transition within 39-months as scheduled.

Part II then takes a critical eye to the total number of antennas television broadcasters will need to conclude the transition. DTC questioned the number, size, cost and complexity of the antennas we identified as requiring replacement. DTC also questioned the ability of stations to reuse existing antennas following the 600 MHz transition. We revisit the broadcaster-supplied data that helped us define the number, scope, physical location and capabilities of existing systems and affirm our earlier conclusions that limited equipment reuse is not only feasible, but also likely to occur.

Parts III through VI address the supplier markets necessary to support the broadcast transition. DTC questioned the capabilities of many of the vendors we had identified and NAB characterized several of these professionals as "fly-by-night" companies. Working together with Mr. Mathur of Hammett & Edison and Mr. Boone of BTTi, we conducted additional interviews with previously identified suppliers. In our follow-up interviews, the vendors largely affirmed the capabilities they described to us originally

² See generally Digital Tech Consulting, Inc., Response to T-Mobile and CCA Reports on the Broadcast Spectrum Repacking Timeline, Resource and Cost Study (Mar. 2016) ("DTC Response").

and, indeed, many said they planned to add capacity and employees in anticipation of the 600 MHz transition. They also reiterated the national scope of their operations. “We go wherever the work is,” more than one vendor told us.³ Since publication of the original *On Time, On Budget* study, moreover, numerous vendors, including several domestic and foreign vendors that our initial analysis had overlooked, have approached us and asked us to supplement our original filing to ensure we add their names to the pool of available broadcast-industry suppliers. Our updated vendor lists show even more capacity than we had originally predicted – more than enough to complete the 600 MHz transition on time and on budget. To help connect broadcasters, qualified tower crews and engineering firms, the FCC should host a directory of service providers that all broadcasters could access prior to the close of the incentive auction.⁴

The 600 MHz incentive auction promises transformative change of both mobile broadband and broadcast television. A timely and cost effective 600 MHz transition will drive deeper value and innovation in both sectors while advancing the public interest in expanded convenience, connectivity and content for consumers.

³ See *Ex Parte* Letter from Trey Hanbury, Counsel, T-Mobile USA, Inc. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, AU Docket No. 14-252 at 2 (filed Apr. 12, 2016) (“T-Mobile April 12, 2016 *Ex Parte*”) (noting that tower companies “are more than prepared to travel wherever they are needed”).

⁴ See *On Time and On Budget* at 47.

I. THE *ON TIME, ON BUDGET* STUDY ANALYZED SIGNIFICANT DISCONNECTS BETWEEN VERIFIABLE BROADCASTER-SUBMITTED DATA REGARDING THE TRANSITION AND ASSERTIONS THAT DTC OFFERED BASED ON INFORMAL, UNVERIFIABLE ESTIMATES

The *On Time, On Budget* study is a data-driven, 412-page analysis that T-Mobile conducted in partnership with Hammett & Edison and BTTi. T-Mobile conducted this analysis in response to DTC's 2015 submission because it was concerned that DTC's submission was factually inaccurate in numerous ways.⁵ The *On Time, On Budget* study confirmed that T-Mobile's concern was well-founded. DTC's reliance on unsubstantiated estimates and informal survey responses obtained from an undisclosed number of broadcast industry participants over an uncertain period of time resulted in assertions that were wholly inconsistent with actual data about the transition.

DTC's latest response again misses the mark. It fails to address the results of the *On Time, On Budget* study's quantitative analysis of broadcasters' sworn submissions to the FCC about the facilities the industry actually operates. It fails to contest the study's review, synthesis and correlation of antenna structure registries against the facilities of auction-eligible television broadcast licensees. And it fails to confront the detailed data analytics used to develop inferences and conclusions from information television broadcast licensees have themselves submitted to the FCC under penalty of perjury, as the *On Time, On Budget* study did.

DTC's proffered criticisms of the *On Time, On Budget* study show only that DTC misunderstood the purpose of the study and its analysis. Our study sought to validate and, where necessary, correct the informal estimates found in the DTC Report by performing a methodical analysis of publicly available FCC relocation simulation and broadcaster Schedule 381 data and conducting verifiable field research over a discrete, 60-day period with named third-party manufacturers, consultants and service providers. The *On Time, On Budget* study was not intended to—and did not—address information in the DTC Report that appeared reasonable based on empirical data and analysis. DTC is thus off-base to suggest that the *On Time, On Budget* study failed to consider certain issues or components of the repacking process; the *On Time, On Budget* study addressed only those components of the broadcaster relocation process for which the data showed a significant discrepancy between verifiable data and what was conveyed in the DTC Report.

The *On Time, On Budget* study, in other words, did not purport to address every conceivable element of the transition process. Instead, our study relied on DTC's estimates where they were reasonable and focused on presenting the full computational

⁵ Digital Tech Consulting, Inc., Broadcast Spectrum Repacking Timeline, Resource and Cost Analysis Study (Oct. 2015) ("DTC Report").

environment used to produce results for key elements of the transition process that third parties, including DTC, could reproduce, question or correct. DTC's latest submission declines to engage in any sort of informed debate about the evidence or about the cost or timing of critical elements of the transition process. It again relies on undocumented anecdotes and idiosyncratic assumptions—even though the *On Time, On Budget* study readily demonstrated the flaws that result from reliance on this type of unverified information. More often than not, DTC's latest assertions are not only incapable of replication, but also are flatly contradicted by quantitative and qualitative evidence available in the record.

A. The *On Time, On Budget* Study Determined That Structural Engineering Resources Will Not Delay The Repacking Based On Several Undisputed Facts

The *On Time, On Budget* study presented broadcaster-certified information on the number of broadcast towers that comply with the latest TIA structural standards. As the study explained, the Schedule 381 data broadcasters submitted to the FCC demonstrated that far fewer towers will require structural engineering resources devoted solely to updating towers to the latest TIA standard than DTC had indicated.⁶ By analyzing data from representations made in every broadcast station's Schedule 381 submissions, the *On Time, On Budget* study found that 37.3 percent of tower structures already meet the TIA Rev. G standard.⁷ The Schedule 381 data also showed that 80 percent of towers meet either the TIA Rev. G or Rev. F standard.⁸

DTC's response does not dispute the calculation of the number of towers meeting the TIA Rev. G or Rev. F standards, and it does not defend or substantiate its original claim that the number of towers that do not meet the TIA Rev. G standard "will likely result in a large number of stations requiring additional design work."⁹ Taking a different tact, DTC's latest argument is that the *On Time, On Budget* study asserted that a tower in compliance with the TIA Rev. G or Rev. F standard will not need any engineering analysis whatsoever.¹⁰

The *On Time, On Budget* study made no such claim. Our study instead provided broadcaster-verified data regarding the number of towers that meet the TIA Rev. F and Rev. G standards and showed that DTC had inaccurately estimated the number of

⁶ See *On Time and On Budget* at 29-30. A formatting error caused some of the Antenna Structure Registration Number and call sign data not to appear in Appendix G to the *On Time, On Budget* Study. A corrected version of the data is attached to this study.

⁷ See *On Time and On Budget* at 29-30.

⁸ See *id.*

⁹ DTC Report at 21.

¹⁰ See DTC Response at 6.

towers meeting the Rev. G standard in its original submission.¹¹ Moreover, the number of towers that currently meet the latest structural standards was only one data point supporting the *On Time, On Budget* study's conclusion that structural engineering resources will not impede the broadcaster relocation. DTC's latest submission failed to address the other structural engineering data forming the basis of the study's conclusion.

DTC's criticism of our study's other data points is equally without merit. For instance, the *On Time, On Budget* study presented Schedule 381 data to show that 12 percent of auction-eligible UHF stations use an antenna capable of operating across the full range of the UHF Band.¹² Our study showed that nearly 20 percent of UHF antennas can operate in one of six or more UHF channels at any one time,¹³ and explained that stations able to repurpose their current antennas to a newly assigned channel will not require the same amount of structural engineering resources as stations that need to change their antennas.¹⁴ DTC does not disagree with the conclusion that stations will require less structural engineering work if they can reuse their antennas. It instead offers a fairly opaque argument about whether 76 stations' antennas "would have to be removed from the towers and returned to their factories for remanufacturing if they were to be used in the post-repack channels, or replaced with new antennas."¹⁵ This assertion conflicts with the practical facts of how broadband antennas operate; most broadband antenna tuning apparatuses that stations may need to adjust to re-channelize an antenna are located near—not in—the antenna and do not require removing the antenna from the tower.¹⁶ More generally, the nature of the argument exemplifies that DTC cannot refute the evidence discussed in the *On Time, On Budget* study as support for its antenna reuse calculations. That evidence informed the study's finding that adequate structural engineering resources are available to meet the repacking process.

DTC does not attempt to raise an issue about the Schedule 381 data the *On, Time, On Budget* study highlighted showing that approximately 50 percent of broadcasters' current antennas are side-mounted antennas that are much less challenging to upgrade

¹¹ See *On Time and On Budget* at 29-30.

¹² See *id.* at 13-14.

¹³ See *id.* at 14.

¹⁴ See *id.* at 28, 36.

¹⁵ DTC Response at 11. To the extent DTC is claiming that the 76 antennas it alludes to but does not identify are not actually broadband antennas, DTC's claims contradict the only known source of information about these facilities, namely the Schedule 381 information that broadcasters themselves were required to file with the FCC and certify as to the accuracy of that information.

¹⁶ See *infra* Section II.B.

than top-mounted antennas.¹⁷ As the study noted, “[r]eplacing current side-mounted antennas with new side-mounted antennas (or retuning current antennas, when possible) should significantly reduce the number of tower modifications needed to complete the repacking process.”¹⁸ That is because broadcasters with side-mounted antennas that do not need extensive tower modifications will reduce demand for structural engineering services.¹⁹ The undisputed data point regarding side-mounted antennas supports the conclusion that current structural engineering resources can meet the relocation deadlines.

Nor does DTC refute the accuracy of—or even address—the information in the *On Time, On Budget* study drawn from the FCC Antenna Structure Registration (ASR) database on the many broadcast television stations that share common tower structures.²⁰ According to the ASR database, sites with multiple antennas will reduce the number of towers needing structural analysis by 17 percent.²¹ The efficiencies produced from multiple stations located on the same structure potentially using the same engineering firms support the timing estimates in the *On Time, On Budget* study.

DTC also does not refute the evidence discussed in the *On Time, On Budget* study regarding the number of broadcast structures that are shorter than the Federal Aviation Administration’s maximum height restriction. The data shows that almost 82 percent of all auction-eligible television antenna structures are fewer than 375 meters (1,230 feet) tall and that 99.2 percent of structures are fewer than 2,000 feet tall.²² As shown in the chart below, the median height of all broadcast towers is approximately 180 meters (590 feet) tall:

¹⁷ See *On Time and On Budget* at 33.

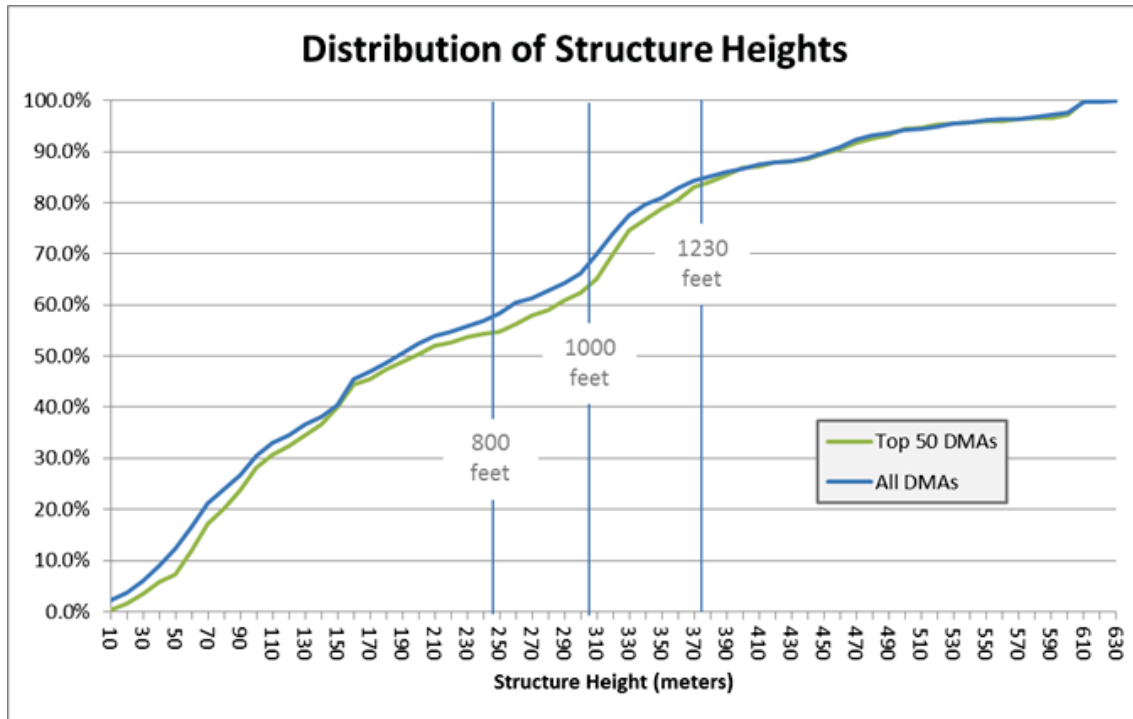
¹⁸ *Id.* at 34.

¹⁹ See *id.*

²⁰ See *id.* at 28.

²¹ See *id.*

²² See *id.* at 31-33.



Broadcasters operating on towers that are shorter than the FAA and FCC’s presumptive maximum structure height can install a taller antenna without necessarily adding height to the existing tower structures. More importantly, the low average height of existing broadcast towers relative to DTC’s claims means that whatever structural work may be required on a structure will involve shorter towers that generally pose far fewer structural challenges and complications than the larger towers DTC improperly assumes are so prevalent.²³

By combining the FCC’s prior repacking simulations with broadcasters’ Schedule 381 data, our study estimated the range of stations that will likely exit the market through the auction and the number of stations likely able to reuse their broadband antennas after the auction. The *On Time, On Budget* study further refined the number of unique antenna structures that will require attention from structural engineers based on the number of remaining stations that are sited on the same tower



**935-Foot-Tall Broadcast Tower
Lexington, Kentucky (2010)**

²³ See *id.*

structure. Moreover, it corrected several faulty assumptions in DTC's initial submission, including: (1) the number of towers that are TIA Rev. G compliant; (2) the percentage of stations operating today using side-mounted antennas; and (3) the actual number of structural engineering firms available to assist with the broadcaster repacking process.

B. Negotiations With Tower Owners And The Channel Changing Capabilities Of Shared Antennas Will Not Delay The Repacking Process

The *On Time, On Budget* study agreed with DTC's original claim that negotiations with third-party tower suppliers should take "about 90 days" and would "run[] parallel with [stations'] engineering activities."²⁴ Based on our collective experience, broadcasters can engage in negotiations with tower owners while simultaneously handling other aspects of the construction permit application process.

DTC's latest submission confusingly argues as though the parties had differing positions; DTC complains that the *On Time, On Budget* study failed to consider that many stations will need to negotiate with tower owners regarding potential changes to antennas and modifications to towers, which DTC estimated could take up to 90 days.²⁵ But the *On Time, On Budget* study relied on the conclusion in the DTC Report that "contractual review between the tenant and its company . . . [will] be about a 90-day process, *running parallel with the engineering activities*."²⁶ In other words, we agreed then and agree now that, in most cases, the third-party tower owner contractual review process will not create significant delays because broadcasters will negotiate with tower owners at the same time they tackle other critical steps in the relocation process. And in the limited number of instances where negotiations are prolonged, the FCC has made clear that stations may seek waivers of the three-month deadline to submit their construction permit applications.²⁷

Publicly available information about tower ownership bolsters this conclusion. The broadcaster-certified Schedule 381 data summarized in the *On Time, On Budget* study showed that 51 percent of UHF and VHF broadcast stations operate on towers that are wholly owned or owned in part by the station, including stations that operate distributed transmission systems involving multiple towers.²⁸ Broadcasters that own their antenna

²⁴ DTC Report at 34.

²⁵ See DTC Response at 7; see also DTC Report at 34.

²⁶ DTC Report at 34 (emphasis added).

²⁷ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Report and Order, 29 FCC Rcd 6567 ¶ 546 ("Incentive Auction Report and Order").

²⁸ See *On Time and On Budget* at App. D. When considering only UHF stations, 45.3 percent of UHF stations own their antenna structures, including stations that operate distributed transmission systems. See *id.*

structures will not face the widespread contractual negotiation gridlock DTC claimed the industry should expect. And for the 49 percent of stations that operate on a leased tower space, broadcast licensees and tower owners alike have strong incentives to prepare for and accelerate lease renegotiation.²⁹ In addition, in the event of a protracted negotiation, stations and tower owners can enter into a letter of intent to provide the requisite reasonable assurance before the construction permit deadline, establishing the fundamental terms of any new lease while continuing to negotiate a more formal lease agreement in tandem with other construction activities.

DTC claims that if a station operates on a shared antenna and the multi-channel antenna is not capable of operating on the stations' new channels, then the RF consulting and tower analysis process "must be carried out for all of the stations on the antenna to determine a new solution."³⁰ As an initial matter, DTC's latest statement overlooks the very real potential for some stations that currently share antennas to surrender their licenses during the reverse auction. And every station that cannot continue to share a common broadband antenna will not necessarily need a separate engineering consultant; there are obvious and considerable efficiencies from retaining a single consultant for the common project. Even if two (or more) stations are no longer capable of sharing the same broadband antenna post-auction, the stations will nonetheless likely stay on the same tower and can create efficiencies by coordinating their relocation process through a single structural engineer or engineering firm.³¹

C. The *On Time, On Budget* Study Took Into Account The Interdependent Nature Of Several Broadcaster Relocation Activities When Estimating That Broadcasters Can Meet The FCC's Deadlines

The *On Time, On Budget* study reviewed each of the components of the construction permit application and construction phases of the broadcaster relocation process. The study combined (1) the results of the FCC's repacking simulations; (2) the data broadcasters submitted in their Schedule 381 filings; and (3) our knowledge of the scope of available RF consulting engineers, structural engineers and tower climbing firms to determine that broadcasters can meet the three-month construction permit application deadline and the 39-month relocation deadline. DTC's latest response largely fails to address the data and arguments on these points, particularly related to the availability of structural engineers. While it presented a comprehensive overview, the *On Time, On Budget* study focused especially on structural engineering resources

²⁹ See, e.g., *Ex Parte* Letter from Christine M. Crowe, Counsel, American Tower Corp. to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Mar. 21, 2016).

³⁰ DTC Response at 7.

³¹ We address DTC's latest claim that the *On Time, On Budget* study did not properly analyze the channel change capabilities of many of the shared antennas in further detail below. See *infra* Section II.B.

because DTC had originally claimed that a lack of those resources would create the primary “bottleneck” to the construction permit application process.³²

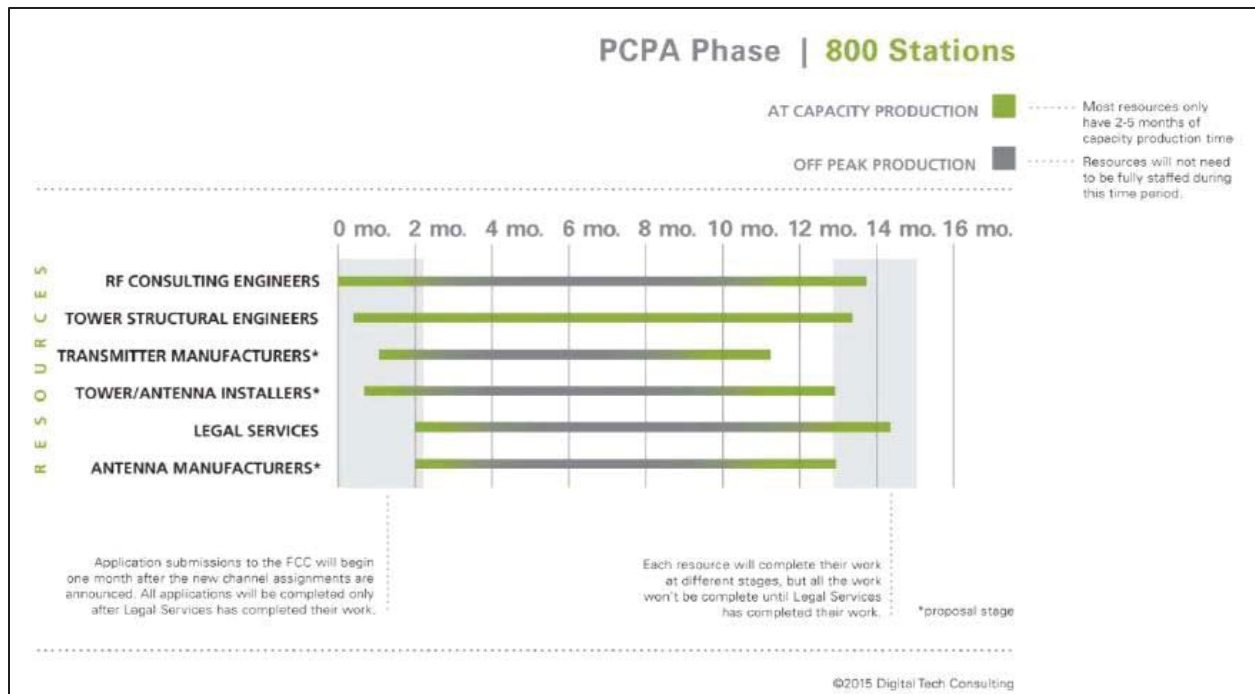
DTC now asserts that the *On Time, On Budget* study failed to recognize interdependencies between RF consulting engineers, structural engineers, antenna and transmitter manufacturers and other consultants associated with filing a construction permit application.³³ This assertion is wrong. Our study focused on rebutting DTC’s inaccurate estimates—and identified several inaccuracies relating to resources broadcasters need to file construction permits—but it also fully recognized the interdependencies between these resources.

DTC’s initial report included a diagram listing several types of vendors that broadcasters may need to employ during the construction permit application phase of the transition process. The diagram estimated the number of months necessary to complete the pre-application projects tasked to each vendor and showed how broadcasters would *simultaneously* work with RF consulting engineers, tower structural engineers, transmitter manufacturers, tower and antenna installers, attorneys and antenna manufacturers throughout the construction permit application phase.³⁴ The diagram set periods of “at capacity” and “off peak” production for each of the construction permit application resources starting at the release of the *Channel Reassignment Public Notice* and spanning across 16 months. The diagram showed that, even according to DTC, broadcasters will work to accomplish different construction permit application planning activities simultaneously. For example, the dark green shading in the diagram shows that RF consulting engineers and tower structural engineers will both work at capacity during the first two months of the construction permit application window. The diagram is reproduced below:

³² See DTC Report at 22, 39.

³³ See DTC Response at 7. In typical fashion, DTC’s generalized complaint did not identify any specific deficiencies in the *On Time, On Budget* study’s analysis or attempt to rebut any particular portion of the study.

³⁴ See DTC Report at 39.



The *On Time, On Budget* study expanded on DTC's diagram. It provided a logical, fact-based explanation of the adequate supply of the various resources that broadcasters will need to complete construction permit applications by the application deadline. DTC originally estimated that once structural engineers performed their construction permit tasks, all other consultants could complete their work *within one month*.³⁵ The *On Time, On Budget* study proved that the scope of necessary structural engineering work is far less than DTC claimed in its original submission and that many more structural engineers are available to assist with the repacking than DTC originally represented.

The *On Time, On Budget* study did not dispute that relocating broadcasters will need to consider the interdependent nature of construction permit application planning activities. The study demonstrated that adequate structural engineering resources exist today to meet the expected needs of remaining broadcasters post-auction, undermining DTC's argument that broadcasters would be unable to submit timely construction permit applications. DTC's about-face claim that the various pre-application activities will collectively limit broadcasters' abilities to timely file construction permit applications is baseless; DTC offers no explanation as to why its prior determination that other pre-application activities could conclude within one month after completion of structural engineering work is now wrong.

³⁵ See DTC Report at 39 ("DTC estimates that it will take the tower structural engineers nearly 14 months to clear the backlog anticipated when all potential repack stations receive notification of channel change We estimate that the entire process will take about 15 months as RF engineering, legal work and equipment quotes must wait on structural engineering reports to finish their tasks.").

D. Recent FCC Rule Changes Will Expedite The Building And Zoning Permit Application Process

There is no question that, as the FCC found in its 2014 decision to adopt phased construction permit periods and DTC noted in its 2015 submission, the repacking process will not proceed in lockstep with uniform progress across every market in the country. Instead, like any other complex transition process, the 600 MHz broadcast transition will involve different markets progressing to the new, post-auction band plan at different rates of speed. The time necessary to acquire local building permits and approve any necessary zoning modifications, for example, will vary from jurisdiction to jurisdiction, depending on both conditions peculiar to the television transmitter sites in the affected market and the stations remaining in the broadcast band following the incentive auction. The variation in federal, state and local processing times may affect the ability of some markets to advance at the same rate of speed as others. This variation is neither unexpected nor unpredictable: the areas and sites most likely to encounter procedural hurdles are widely known, and a well-organized transition will commence the local building and zoning aspects of the relocation process in the more procedurally challenging areas even as it directs the majority of on-the-ground, capital and human resources to those areas that raise fewer concerns for state, local or federal governments.

Given the widely anticipated divergence in processing times among different jurisdictions, DTC's claim that the *On Time, On Budget* study did not consider the time needed to acquire building and zoning permits falls flat.³⁶ Unlike many of DTC's inaccurate estimates, its original assessment that obtaining zoning and building permits would generally take approximately three months did not appear grossly inconsistent with past experience or available empirical data; therefore, the *On Time, On Budget* study did not dispute it.³⁷ DTC itself states in its most recent submission that stations can apply for building and zoning permits "while waiting for the FCC approval" of construction permit applications.³⁸ Stations can likewise take several additional steps towards completing the relocation while those zoning and building permit applications are pending, such as ordering and waiting for equipment.³⁹

DTC's implication seems to be that the FCC should base its station relocation planning on a "worst case scenario" that assumes every single station (1) will need to apply for new zoning and permitting and (2) will experience significant delays in obtaining new zoning and permitting approvals. This type of uniform procedural stonewalling runs

³⁶ See DTC Response at 8.

³⁷ See DTC Report at 35.

³⁸ *Id.* at 7-8.

³⁹ See *id.* at 8.

contrary to experience and, following the FCC's 2014 *Broadband Infrastructure Order* that sharply limited the types of objections state and local zoning authorities can raise to facilities siting requests, is unlikely to occur.⁴⁰

The *Broadband Infrastructure Order* adopted rules limiting the ability of state and local jurisdictions to delay zoning requests for communications facilities.⁴¹ The FCC adopted these rules specifically with an eye towards the incentive auction; the agency concluded "that inclusion of broadcast service equipment in the scope of transmission equipment covered by the provision furthers the goals of the legislation and will contribute in particular to the success of the post-incentive auction transition of television broadcast stations to their new channels."⁴² Among other things, the agency included broadcast transmission equipment, including antennas and coaxial cable, within the scope of facilities for which state and local governments cannot deny modifications when the modifications do not "substantially change the physical dimensions" of a tower or base station.⁴³ Under the FCC's liberal definition of a "substantial change," a tower outside of a public right-of-way will only undergo a "substantial change" if a modification "increases the height of the tower by more than ten percent or by the height of one additional antenna array with separation from the nearest existing antenna not to exceed twenty feet, whichever is greater."⁴⁴ The FCC found that its rules would "expedite and minimize the costs of the relocation of broadcast television licenses that are reassigned to new channels in order to clear the spectrum that will be offered for broadband services through the incentive auction"⁴⁵ Some stations will encounter delays, of course. But for those stations, the Commission has established a waiver process that offers a remedy without unnecessarily delaying the repacking process as a whole. DTC itself anticipated that local zoning and other approval issues would merit FCC waiver of certain deadlines.⁴⁶ But DTC's failure to acknowledge the FCC's rule changes in both its original and supplemental submissions undercut DTC's most recent claim that zoning and permitting issues will significantly delay the broadcaster relocation process.

⁴⁰ See generally *Acceleration of Broadband Deployment by Improving Wireless Facilities Siting Policies, et al.*, Report and Order, 29 FCC Rcd 12865 (2014).

⁴¹ See *id.*

⁴² *Id.* ¶ 153.

⁴³ *Id.* ¶ 15.

⁴⁴ *Id.* ¶ 188.

⁴⁵ *Id.* ¶ 153.

⁴⁶ See DTC Report at 23. To the extent the FCC is able to anticipate areas of the country where acquiring zoning or building permits will be particularly problematic, it should organize its broadcaster relocation process so that those areas are repacked at the end of the transition. See *Ex Parte* Letter from Trey Hanbury, Counsel, T-Mobile to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268, AU Docket No. 14-252 (filed Mar. 3, 2016) ("T-Mobile Repacking Ex Parte").

The *On Time, On Budget* study agreed with DTC's original determination that broadcast stations will need approximately three months to secure zoning and permitting approvals. The study concurred with DTC's estimate based on prior experience and the FCC's 2014 rules that restrict state and local zoning and permitting agencies' authority to delay the repacking process. DTC's latest submission presents no convincing evidence that zoning and permitting issues will materially delay the repacking process.

E. The *On Time, On Budget* Study Provided Compelling Evidence That Antenna Manufacturers Can Meet The Increase In Demand For Antennas Following The Incentive Auction

The *On Time, On Budget* study surveyed the current broadcast antenna marketplace and antenna manufacturers' efforts to meet the increased demand that will come following the incentive auction.⁴⁷ It used broadcasters' submitted Schedule 381 data to demonstrate that companies other than the two largest antenna manufacturers have manufactured approximately 30 percent of currently deployed television antennas used by full-power and Class A stations.⁴⁸ The study also presented evidence that antenna manufacturers are gearing up for the post-auction surge in demand.⁴⁹ For example, one antenna manufacturer ordered hundreds of thousands of dollars of supplies in anticipation of the repack, and another manufacturer reopened a U.S. factory that it had previously shuttered.⁵⁰ DTC's most recent submission does not address any of this evidence of the growing supply for broadcast antennas.

Instead, DTC complains that the *On Time, On Budget* study assumed that manufacturers would build antennas for stock and therefore underestimated equipment-delivery times.⁵¹ DTC's inability to point to anywhere that the *On Time, On Budget* study made such a claim is telling. Our study assumed no such thing. To the contrary, the study discussed manufacturers' ability to expand existing capacity to satisfy the upcoming increase in demand.⁵² It never assumed that antenna manufacturers would pre-produce antennas. While such a course of action would represent a prudent decision—and would have the added benefit of accelerating the transition—the benefits of pre-production were not included in, or relevant to, the study's conclusion that the transition can conclude as scheduled based on an adequate supply of television broadcasting equipment.

⁴⁷ See *On Time and On Budget* at 20-21.

⁴⁸ See *id.* at 20.

⁴⁹ See *id.* at 21.

⁵⁰ See *id.*

⁵¹ See DTC Response at 8.

⁵² See *On Time and On Budget* at 21.

F. T-Mobile Has Proposed A Plan To Address Market And Regional Considerations For The Repacking Process

T-Mobile recently presented guiding principles for a regional repacking process to the FCC.⁵³ Under T-Mobile's proposal, the FCC would divide the country into eight regions and create multiple, parallel repacking processes in each region.⁵⁴ The process of unraveling tangled daisy-chains of interference would start from the corners in each region where the relationships among stations are less complicated and move toward the more interconnected areas. This approach would ensure the timely availability of additional low-band wireless broadband spectrum in a mix of low-density rural markets, such as the rural Northeast, as well as high-density urban markets, such as South Florida.⁵⁵ And by clearing the corners of each region first, it would reduce the complexity of the task of untangling the interconnected stations at the center of each region. For example, as NAB has recently noted, broadcasters in major metropolitan markets like New York City and Denver are likely to need longer to clear out of the band.⁵⁶ Starting the relocation process in areas *other than* these metropolitan areas allows vendors to focus clearing resources on easier-to-clear markets while providing lessons and paving the way for more complex markets. An additional benefit of this approach would be to allow stations located in the more complex and procedurally challenging locations of each region to start the process, including filing for permits, early on, even as other markets outside the most complex areas progress toward or complete the transition to a post-auction band plan.⁵⁷ This type of concurrent, regional relocation process will help avoid many of the zoning, permitting and temporary facility concerns that DTC belatedly raises in its most recent submission.⁵⁸ An orderly transition plan should also help allow tower crews to prepare for relocating from one part of a repacking region to another and aid antenna and transmitter manufacturers in prioritizing orders.

G. Broadcasters Can Prepare For The Post-Auction Relocation Process

There is no reason for broadcasters to hold off on preparing now for the post-auction relocation. DTC suggests that most broadcasters will not know their channel assignment until after the close of the auction and therefore cannot get reliable quotes

⁵³ See *generally* T-Mobile Repacking Ex Parte.

⁵⁴ See *id.* at attach. 3.

⁵⁵ See *id.* at attach. 16.

⁵⁶ See Patrick McFadden, *Time to Stick to the Facts and Find the Right Answer*, NAB Policy Blog (Mar. 23, 2016, 1:20 PM), <https://nabroadcasters.wordpress.com/2016/03/23/time-to-stick-to-the-facts-and-find-the-right-answer/>.

⁵⁷ See T-Mobile Repacking Ex Parte at attach. 16.

⁵⁸ See DTC Response at 10.

for channel-specific components.⁵⁹ The facts do not support DTC’s sky-is-falling view of industrial paralysis in the face of some measure of uncertainty. Stations that are not participating in the auction can conduct a comprehensive inventory, including item number, manufacturer, photographs of the installation, and related information for all equipment necessary. Broadcasters can also assemble critical documentation, such as tower blueprints, that will be useful in the transition. They can gather information about the local permitting and zoning processes and familiarize themselves with new features and staff.⁶⁰ And all stations can and should review their latest tower structural analysis and begin evaluating the advantages and disadvantages of particular replacement equipment options.⁶¹ For example, while an antenna manufacturer may not be able to provide a broadcast station with an exact estimate for a particular replacement antenna until after the auction, a station could review options for antennas that would or would not likely require tower modifications. All of this information should be assembled and stored in an organized manner, and duplicates could be made of key documents so that vendors have ready access to the material when developing cost estimates for any frequency relocation that may be required.

DTC’s latest study fails to acknowledge many of the meaningful planning activities that stations can undertake prior to the close of the 600 MHz incentive auction, but implies that some limited planning could occur if the FCC adopted rules to allow broadcasters to receive reimbursement for pre-auction relocation expenses.⁶² The FCC recently adopted a *Declaratory Ruling* to clarify the scope of pre-auction expenses eligible for reimbursement.⁶³ The FCC decided that it will reimburse broadcast stations for “costs reasonably incurred” before and during the auction that otherwise are eligible for reimbursement.⁶⁴ The FCC’s ruling will “allow[] broadcasters to get a jump start on the relocation process” and “promote a rapid, non-disruptive transition following the broadcast television spectrum incentive auction.”⁶⁵ The *Declaratory Ruling* provides certainty to broadcasters by allowing some relocation work to begin before the FCC releases its *Channel Reassignment Public Notice*. The FCC’s recent decision to authorize reimbursement for qualified planning expenses will further accelerate the transition.

⁵⁹ See *id.* at 16.

⁶⁰ See *On Time and On Budget* at 44.

⁶¹ See *id.* at 47.

⁶² DTC Response at 16.

⁶³ See *Expanding the Economic and Innovation Opportunities of Spectrum Through Incentive Auctions*, Declaratory Ruling, FCC 16-47 (rel. Apr. 18, 2016).

⁶⁴ *Id.* ¶ 6.

⁶⁵ *Id.* ¶ 1.

II. THE ON TIME, ON BUDGET STUDY ACCURATELY ASSESSED THE NUMBER OF ANTENNAS BROADCASTERS WILL NEED TO REPACK

DTC contends that the *On Time, On Budget* study overestimated the number of stations capable of operating on existing antennas, failed to account for the costs of replacement or temporary antennas and assumed that stations would share broadband antennas. DTC's objections are both unsupported and misleading.

A. The *On Time, On Budget* Study Accurately Estimated The Number of Stations Likely to Change Channels.

Based on the FCC's repacking simulations, the *On Time, On Budget* study estimated that between 956 and 1,199 stations would need to be repacked, absent pre-auction optimization to keep stations on their existing channels.⁶⁶ With optimization, that estimate dropped to between 796 and 967 stations.⁶⁷ Even those numbers are conservative: updated reverse-auction participation modeling showed that even fewer stations may need to repack.⁶⁸

Nothing in DTC's response casts doubt on our study's estimates, which used the older, more conservative values the FCC produced in 2014. In fact, DTC now admits that the number of stations that the FCC will need to repack "could be less than [DTC's own] estimates."⁶⁹ Moreover, DTC fails to acknowledge, much less correct, the manifest errors in its original report. As the *On Time, On Budget* study noted, DTC's original report misstated the number of stations exiting the marketplace under the FCC's 84 megahertz and 126 megahertz repacking simulations.⁷⁰ And the number of stations that DTC's original report listed as eliminated, unmoved, or repacked in the 126 megahertz repacking scenario did not equal the total number of eligible UHF stations.⁷¹ In short, DTC's response fails to correct errors in its original report or seriously refute the *On Time, On Budget* study's estimates of the number of stations that will likely change channels following the incentive auction.

⁶⁶ See *On Time and On Budget* at 19.

⁶⁷ See *id.*

⁶⁸ See *id.* at 19-20.

⁶⁹ DTC Response at 17.

⁷⁰ See *On Time and On Budget* at 8.

⁷¹ See *id.*

B. DTC Agrees That A Significant Number Of Stations Can Reuse Their Existing Antennas On New Channel Assignments.

DTC does not dispute that 26 out of 102 stations in the 126 megahertz clearing range could operate on their new channels with their existing antennas or address the other 91 stations that operate outside of the 126 megahertz clearing target using fully broadband antennas.⁷² Instead, DTC relies on unattributed statements to argue that the Schedule 381 data cited in the *On Time, On Budget* study improperly listed 76 stations within the 126 megahertz clearing range as using antennas capable of operating in the post-auction TV band.⁷³ This assertion has no basis. DTC cites just four examples of stations purportedly misidentified in the study, two of which were not actually among the stations the study identified as having an antenna capable of operating over the entire UHF Band.⁷⁴

The *On Time, On Budget* study analyzed Schedule 381 data broadcasters submitted to the FCC and determined that nearly 20 percent of UHF antennas are capable of operating on six or more UHF channels.⁷⁵ Those submissions were due to the FCC by July 9, 2015—almost four months before DTC submitted its original report.⁷⁶ Yet DTC made no effort to incorporate the Schedule 381 data into its calculations. Instead, DTC relied on “expert” opinions presented without attribution or any objectively verifiable basis.⁷⁷

In its response to *On Time, On Budget*, DTC asks the FCC to credit its unverifiable claims over the official data broadcasters certified to in their Schedule 381 filings. According to its unnamed sources, DTC claims that somewhere between 49 and 76

⁷² One-hundred and ninety three auction-eligible broadcasters use an antenna that supports the entire UHF Band, including three stations whose current auction status is unknown with any certainty. See *On Time and On Budget* at App. B; Stipulation of Voluntary Dismissal Pursuant to F.R.A.P. 42(b), *The Videohouse, Inc., et al. v Fed. Commc’ns Comm’n*, No. 16-1060 (D.C. Cir. May 5, 2016). An additional five broadcasters report using an antenna that supports every channel in the UHF Band other than Channel 51. See *On Time and On Budget* at App. B. Moreover, 217 stations have antennas that support Channels 15 to 29, which is the most likely range of channels in which the FCC will repack stations that continue to operate if the incentive auction were to clear 126 megahertz of spectrum. See *id.*

⁷³ See DTC Response at 11. DTC also claims that the *On Time, On Budget* study misidentified 49 stations within the 84 megahertz clearing target as using antennas capable of operating in the post-auction TV band. *Id.* Here too, DTC does not identify the stations that have filed data with the FCC ostensibly misrepresenting the nature of their antennas.

⁷⁴ See *On Time and On Budget* at 13, App. B.

⁷⁵ See *id.* at 14.

⁷⁶ See *Media Bureau Announces Incentive Auction Eligible Facilities and July 9, 2015 Deadline for Filing Pre-Auction Technical Certification Form*, Public Notice, 30 FCC Rcd 6153 (MB June 9, 2015).

⁷⁷ See DTC Response at 11.

stations misrepresented their antennas' capabilities.⁷⁸ DTC does not identify which broadcast licensees erred in their submissions to the FCC, nor does it offer any concrete data to support its claims.⁷⁹ Indeed, the only specific examples DTC cites are four stations sited on the Mt. Wilson tower in Los Angeles.⁸⁰ Two of those stations—KXLA-TV and KJLA-TV—were never mentioned in the *On Time, On Budget* study's list of stations capable of operating on a lower channel.⁸¹ Based on those stations' Schedule 381 data, the *On Time, On Budget* study reported that the stations' shared antenna can operate on Channels 32-51.⁸² As for DTC's claim that the antenna shared by the other two stations on the Mt. Wilson tower—KDOC-TV and KOCE-TV—was "specifically built for Channels 32 to 51, and cannot operate in the lower portion of the band,"⁸³ this claim directly contradicts the information those stations provided to the FCC in their certified Schedule 381 submissions.⁸⁴

Some broadcast licensees may have unintentionally misreported the broadband capabilities of their antennas. To explore this possibility, Hammett & Edison reviewed antenna specification sheets for each of the antennas that broadcast licensees identified as capable of broadcasting across the entire UHF Band.⁸⁵ Hammett & Edison then contacted several antenna manufacturers to gather information on the sub-banding of particular antenna makes and models.⁸⁶ Based on a review of antenna specification

⁷⁸ See *id.*

⁷⁹ See *id.* at 4, 11.

⁸⁰ See *id.* at 11.

⁸¹ See *On Time and On Budget* at 13, App. B.

⁸² See *id.*

⁸³ DTC Response at 11.

⁸⁴ See *On Time and On Budget* at App. B.

⁸⁵ As one example, Hammett & Edison reviewed the specification sheet for the Scala 4DR series UHF antenna and determined that, despite the general specifications stating that the product can operate between 470 and 862 MHz, the models are actually manufactured to operate within one of three sub-bands (470-560 MHz, 560-656 MHz or 656-862 MHz). See Kathrein Scala Division, 4DR Series Parapanel® UHF-TV Antennas and Arrays, available at <http://www.kathreinusa.com/wp-content/uploads/2015/09/4DR-4S.pdf>.

⁸⁶ Hammett & Edison contacted Dielectric and Radio Frequency Systems to determine which (if any) of its antennas are limited to particular sub-bands. Dielectric informed Rajat Mathur of Hammett & Edison that certain antennas in the Dielectric "TU" series are not fully broadband. Specifically, models TUC, TUD, TUE and TUG are broadband panel antennas that are optimized for various sub-bands. Model TUC is optimized for channels 14-20, model TUD is optimized for channels 20-30, model TUE is optimized for channels 30-40, and model TUG is optimized for channels 40-51. Further, Dielectric model TUF is a non-broadband, slot antenna and model TUM is a circularly polarized broadband antenna that is only guaranteed to operate across approximately 20 channels in the UHF Band. Dielectric models TUA and TUP are fully broadband, non-optimized panel antennas. RFS informed Hammett & Edison that, in addition to the two PHP panel antennas custom designed for the four stations in Los Angeles DTC identified in its latest submission, earlier versions of its PHP panel antennas are limited to operating over

sheets and sub-banding information from Dielectric and RFS, Hammett & Edison estimates that no more than 45 stations within the 126 megahertz clearing target use fully broadband antennas that may not be capable of operating in the post-auction remaining TV band.⁸⁷ Using the same methodology, Hammett & Edison estimates that a maximum of 31 stations within the 84 megahertz clearing target use antennas that may not be capable of operating in the post-auction remaining TV band. Hammett & Edison's estimate of the number of stations using "broadband" antennas within the 126 megahertz clearing target that may not actually be capable of broadcasting across the entire UHF Band is 40 percent less than DTC's estimate.⁸⁸ And while these stations' antennas may be optimized for a particular subset of channels within the UHF Band, even stations that may have overstated the broadband capabilities of their antennas may yet be able to reuse their antennas, depending on the sub-banding of the antenna and the station's ultimate channel assignment.⁸⁹

DTC separately claims that stations must remove broadband antennas from a tower prior to operating on a new channel. Not so. Hammett & Edison interviewed two representatives of Dielectric, one of the largest antenna manufacturers and an experienced and knowledgeable source on the subject of antenna re-channelization. These interviews, conducted on March 28 and March 29, 2016, confirmed that re-channelizing a broadband antenna almost never requires removing the antenna from a broadcast tower.⁹⁰ According to Dielectric, most tuning apparatuses that stations may need to adjust to re-channelize an antenna are located *separate from* the actual antenna. Indeed, the Dielectric representatives were unable to identify a single

the upper half of the UHF Band only. Hammett & Edison categorized any station using an RFS PHP series antenna with a license date of 2006 or earlier as not having a fully broadband antenna.

⁸⁷ Appendix A attached to this study identifies the call sign, channel, city and state and antenna make and model of each station the *On Time*, *On Budget* study categorized as having a fully broadband antenna, and states whether or not the antenna is actually capable of broadcasting across the entire UHF Band based on Hammett & Edison's review of the specification sheets and the sub-banding information received from Dielectric and RFS. Only 25 out of the 45 stations within the 126 megahertz clearing target identified for certain use non-fully broadband antennas. The status of the other 20 stations' antennas is either unknown or only suspected of not being capable of operating across the entire UHF Band. To produce conservative estimates we include these stations in the total number of operators not using a fully broadband antenna.

⁸⁸ Stated another way, for the 126 megahertz clearing target, DTC overestimated the number of stations that cannot reuse their fully broadband antennas by at least 31 stations. DTC Response at 11. For the 84 megahertz clearing target, DTC overstated the number of stations that cannot reuse their fully broadband antennas by at least 18 stations. *Id.*

⁸⁹ The broadcaster-certified Schedule 381 data states that all of these stations operate using an antenna capable of broadcasting over the entire UHF Band. See *On Time* and *On Budget* at App. B.

⁹⁰ The results of the interviews with Dielectric employees comports with recent Dielectric sales literature. See, e.g., DIELECTRIC, YOUR GUIDE TO THE FCC TV CHANNEL REPACK 3 (2016), *available at* <http://www.dielectric.com/wp-content/uploads/2016/03/DIELECTRIC-FCC-Checklist.pdf> ("[M]ost (but not all) panel antennas are inherently broadband, making them a good candidate for re-channelizing.").

antenna-performance issue that would require a broadband antenna to come off of a tower for adjustment so long as the station's new channel assignment was within the operating range of the broadband antenna.⁹¹

DTC's latest submission fails to acknowledge the number of broadband antennas in the field today, finds fault with broadcasters' self-reported data to the FCC without any objectively verifiable basis for doing so and overstates the amount of work needed to retune broadband antennas that are deployed today.

C. The Supply Of Auxiliary And Temporary Antenna Systems Will Not Delay The Repacking.

The *On Time, On Budget* study combined the FCC's repacking simulation data with broadcasters' certified Schedule 381 data. DTC complains that this assessment failed to account for replacements of back-up, standby antennas.⁹² According to DTC, "[b]ased on the FCC Form 177 data, there are 192 licensed auxiliary antennas in use by both UHF and VHF stations."⁹³

The FCC does not release Form 177 data, which is confidential, and its disclosure is subject to the FCC's rules on prohibited communications; therefore, T-Mobile cannot verify DTC's claims.⁹⁴ But the publicly available data conflicts with DTC's latest calculation of the number of licensed auxiliary antennas that DTC ostensibly drew from some subset of confidential Form 177 data. A search of the FCC's Licensing and Management System shows 126 UHF auxiliary antennas and 36 VHF auxiliary antennas, for a total of 162 licensed UHF and VHF auxiliary antennas—30 fewer than DTC claims. In most cases, VHF stations will not change channels and will not need to replace their auxiliary antennas. While DTC cites the "estimate[s]" of "some experts"

⁹¹ DTC's latest response claims more generally that broadband panel antennas increase wind loading on towers, are heavier and are prone to reliability problems. See DTC Response at 12. DTC's complaints with broadband panel antennas lack merit for several reasons. First, 22 percent of auction-eligible UHF stations use a panel antenna. See *On Time and On Budget* at 12. If broadband panel antennas were as unreliable as DTC claims then fewer than one in five eligible UHF stations would likely use these antennas. Moreover, a search of the FCC's Licensing and Management System database reveals that 15 stations today use a broadband RFS-RD cavity *slot* antenna. See *id.* at App. B. Broadband slot antennas offer the same multi-channel functionality as broadband panel antennas in a lighter weight and more accessible format.

⁹² See DTC Response at 11-12.

⁹³ *Id.* at 11.

⁹⁴ FCC Form 177 is a form broadcasters use to submit confidential information to the FCC to apply to participate in the incentive auction.

that there may be still more *unlicensed* auxiliary antennas, there is no way to confirm those estimates or determine how many unlicensed antennas are UHF antennas.⁹⁵

DTC concedes that approximately half of all auxiliary antennas are broadband and that “the stations with [these] antennas will be able to use them during the repack transition while their main antennas are changed out.”⁹⁶ Applying DTC’s estimate of the percentage of broadband antennas to the actual number of auxiliary antennas licensed to UHF stations, broadcasters will only need to replace approximately 63 auxiliary antennas—27 less than DTC claims.⁹⁷ That difference is significant. The Schedule 381-based estimate of UHF antennas presented in the *On Time, On Budget* study was one of the factors in the significantly lower costs the study predicted.

The *On Time, On Budget* study accurately accounted not only for the costs of auxiliary antennas, but also for the time needed to produce them. DTC asserts that approximately 1,050 Full-Power stations operate with only a single antenna that is not capable of operating on a new channel assignment. Of these stations, DTC claims that 70 percent are operating within the FCC’s clearing targets and will need access to interim antennas and transmission lines to avoid service disruptions during the repacking process.⁹⁸ That estimate relies on deeply flawed assumptions that significantly exaggerate the number of auxiliary antennas needed.

DTC’s estimate ignores how a significant number of the 700 full-power stations operating within the FCC’s clearing targets will not need temporary facilities because they will go off of the air following the auction. And DTC apparently assumes that every station that stays on the air and that does not currently have either a broadband antenna or an auxiliary antenna will need a new, interim antenna.⁹⁹ But that will not necessarily be so. Some relocating broadcast stations may be able to operate on their existing antennas while installing a new antenna, depending on the size of the station’s current and replacement antennas and the station’s tower structure. And stations that exit the market might be able to sell their compatible antennas to reassigned stations to use on an interim basis.¹⁰⁰ DTC never addressed the impact that exiting stations and their antennas might have on manufacturing demands and aggregate broadcaster relocation costs.

⁹⁵ DTC Response at 11.

⁹⁶ *Id.* at 12.

⁹⁷ *See id.*

⁹⁸ *See id.*

⁹⁹ *See id.*

¹⁰⁰ *See On Time and On Budget* at 16 n.57.

DTC also concedes that some antenna suppliers have standby or interim antennas that they will rent to stations, but it claims antenna manufacturers do not plan to increase their stock of standby antennas.¹⁰¹ As a result, DTC asserts that “many stations will be forced to purchase interim antennas.”¹⁰² But every station in the country will not need a standby antenna, and the stations that do will not all need standby antennas at the same time. The FCC will implement a phased repacking schedule under which some stations will transition to their new channel earlier than others.¹⁰³ Moreover, Dielectric informed Hammett & Edison in April 2016 that it intends to manufacture and keep on hand a supply of broadband standby antennas similar to what the company had available during the DTV transition. Dielectric plans to meet its customers’ standby antenna needs through a combination of purchase agreements and leasing arrangements. Other manufacturers are likely to follow suit.

If just the two largest antenna manufacturers each keep a dozen broadband standby antennas in inventory for leasing, most broadcasters will not need to purchase a standby antenna to stay on air throughout the phased transition process. And broadcasters are even less likely to need to purchase standby antennas if smaller antenna manufacturers follow suit and make additional broadband standby antennas available during the repacking. A coordinated repacking process that takes advantage of existing rental antennas will alleviate antenna manufacturing demand.

D. The *On Time, On Budget* Study’s Conclusion That Broadcasters Can Repack On Schedule Did Not Depend On Antenna Sharing.

The *On Time, On Budget* study’s review of broadcaster data identified several prominent examples of multiple stations operating over the same broadband antenna through the use of combiners and filters.¹⁰⁴ The study discussed the potential benefits of antenna sharing and suggested that stations are likely to pursue this model in the future as tower rental costs continue to rise.¹⁰⁵ But, contrary to DTC’s assertion, the study did not rely on antenna sharing efficiencies to determine either the time or costs necessary to repack remaining broadcasters following the auction.¹⁰⁶ Rather, the study cited these examples to show that DTC’s “failure to consider future antenna sharing arrangements likely resulted in DTC overestimating the number of stations that will

¹⁰¹ See DTC Response at 15.

¹⁰² *Id.*

¹⁰³ See *Incentive Auction Report and Order* ¶¶ 568-70.

¹⁰⁴ See *On Time and On Budget* at 15-16.

¹⁰⁵ See *id.*

¹⁰⁶ See DTC Response at 12-13.

require new antennas,” and to suggest that stations that pursue this option could produce *additional* time and cost savings beyond those documented in the study.¹⁰⁷

E. Most Broadband Antennas Can Be Reused Without Materially Changing A Station’s Antenna Pattern.

Since the release of the *On Time, On Budget* study, some critics have asked whether variations in antenna patterns due to frequency changes could prevent broadcasters from reusing their existing broadband antennas in their post-auction channel assignments.¹⁰⁸ While frequency changes can cause antenna patterns to vary, sometimes significantly, the short answer to the question is no.

A majority of broadband antennas in operation today will experience no meaningful variation in antenna pattern from the change in frequencies because they are omnidirectional.¹⁰⁹ Omnidirectional antennas are intended to generate equal power at every azimuth. Projecting power equally in all directions means that using the antenna on a new channel will have a uniform effect on a station’s predicted coverage contour.¹¹⁰ The uniform nature of any change affords broadcasters using broadband omnidirectional antennas great latitude to replicate their coverage contours on their new channels through adjustments to the transmission system without having to expend substantial time or money to replace or re-channelize their antennas.¹¹¹

The remaining 44 percent of broadcasters, who use directional broadband antennas, can also reuse their antennas in many circumstances without significant work. Although directional antennas are designed to radiate greater power in specific directions to achieve increased coverage or performance, changing the transmitting frequency of a

¹⁰⁷ *On Time and On Budget* at 16.

¹⁰⁸ See *Ex Parte* Letter from Rick Kaplan, General Counsel and Executive Vice President, Legal and Regulatory Affairs, National Association of Broadcasters to Marlene H. Dortch, Secretary, FCC, GN Docket No. 12-268 (filed Mar. 9, 2016) (“NAB *Ex Parte*”); see also DTC Response at 12.

¹⁰⁹ See *On Time and On Budget* at App. B. Of the 316 broadcasters using UHF antennas capable of tuning across six or more TV channels, 176 report using omnidirectional antennas. See *id.*

¹¹⁰ In the real world, omnidirectional antennas are not perfect circles, but often more like 8, 10 or 12-point shaped star patterns. But *TV Study*, and in turn the FCC, treat omnidirectional antennas as perfect circle patterns for coverage contour calculations. See 47 C.F.R. § 73.625(c)(3) (requiring users of directional antenna systems to provide horizontal plane system information to the FCC); see also FCC Form 301 at 13 (providing “Not Applicable (Nondirectional)” as an option to stations reporting their antenna type) or the newer FCC Form 2100 Schedule A. A non-directional antenna does not have a horizontal pattern associated with it, and the FCC will consider a non-directional antenna as a perfect omnidirectional antenna on any specified channel.

¹¹¹ Due to the propagation advantages of lower-frequency spectrum, most broadcasters will be able to transmit at lower power on lower-frequency channels while still achieving substantially the same coverage contour as higher-powered transmitters operating on higher-frequency channels.

directional broadband antenna is manageable.¹¹² A channel change may result in a change to the directional antenna pattern. In such a case, stations with directional antennas will have two options in the repacking process. First, a station could alter its new coverage contour to better match its original contour by adjusting power levels.¹¹³ Power control may mean increasing or decreasing the output power of the transmitter by a small amount within the existing range of the transmitter's capabilities.¹¹⁴ Second, the FCC has long planned for modest variations around the edge of the antenna coverage contour and permits stations to increase their coverage contour by applying for "expanded facilities."¹¹⁵ A station reassigned to a channel within the same band that wishes to extend its contour area by more than one percent may request a waiver.¹¹⁶ The FCC has said it will assign priority to those coverage-expansion requests that show that reasons beyond the station's control have prevented the station from constructing facilities that meet specified technical parameters or the permissible coverage-contour variations.¹¹⁷ The time and cost savings associated with reusing directional broadband antennas should help demonstrate that strict compliance with the applicable service contours would not serve the public interest.

¹¹² Directional panel antennas are sometimes used to approximate the pattern of an omnidirectional antenna; however, assembling multiple panels for this purpose tends to produce a pattern that is shaped like a star as opposed to a circle as is the case with a true omnidirectional antenna.

¹¹³ See *Incentive Auction Report and Order* ¶ 166 ("Assuming a station maintains its other existing technical parameters, i.e., location, antenna height and antenna pattern, we will permit the station to adjust its power on the new channel until the geographic area within the station's noise-limited or protected contour (depending on whether the station is full power or Class A) is equal to the area within the station's original contour on its pre-auction channel. This approach will allow stations to preserve their existing coverage areas using antennas that are practical to build, so that stations will be able to actually construct their new facilities.").

¹¹⁴ These power-level changes needed would rarely require the broadcaster to install a costly, new transmitter. But in some scenarios, installing less costly, low-power transmitters may represent the best solution to accommodating the change in antenna pattern. In the less common case in which a broadcaster must rely on a new, more expensive, high-power transmitter to generate the coverage required to replicate its old pattern, installing a higher-power transmitter with the station's existing antenna would generally offer a more economical solution than wholesale antenna replacement.

¹¹⁵ *Incentive Auction Report and Order* ¶ 553.

¹¹⁶ See *id.* ¶ 548. The FCC defines "expanded facilities" as those that propose a change in height above average terrain, effective radiated power or transmitter location that (i) would be considered a minor change under the FCC's rules (see 47 C.F.R. § 73.3572(a)(1)–(3); 47 C.F.R. § 74.787(b)); and (ii) in the case of a station reassigned to another channel within its existing band, would result in a change in such station's contour beyond one percent in any direction from the coverage area defined by the technical parameters specified in the *Channel Reassignment Public Notice*. See *Incentive Auction Report and Order* ¶ 553 n.1569.

¹¹⁷ See *id.* ¶ 554.

The *On Time, On Budget* study did not assert that broadcasters can or must reuse all broadband antennas deployed in the field today, contrary to some recent claims.¹¹⁸ Rather, the study simply observed that it would be a mistake to assume that *no* broadcast antennas can be reused. Sensible reuse of frequency-agile television broadband antennas promises to reduce costs, minimize disruption to television viewers and accelerate the availability of spectrum for broadband deployment.¹¹⁹

¹¹⁸ See NAB Ex Parte at 2.

¹¹⁹ The FCC has noted that some broadcasters can retune primary or auxiliary antennas and transmitters for interim operations during the transition. See *Instructions for TV Broadcaster Relocation Funds Reimbursement Form (FCC Form 2100, Schedule 399)*, “[Section] B – Broadcaster Estimated or Actual Transition Expenses” as submitted to and approved by OMB, available at <http://www.reginfo.gov/public/do/DownloadDocument?objectID=61546801>.

III. THE ANTENNA MARKETPLACE IS THRIVING AND EAGER TO SUPPLY INCREASED DEMAND

The *On Time, On Budget* study identified numerous antenna manufacturers, in addition to the largest two providers on which DTC continues to focus, that have built high-power broadcast antennas for U.S. broadcasters in the past.¹²⁰ Contrary to DTC's claims, these smaller antenna manufacturers are eager to meet the growing demand following the incentive auction.

DTC asserts that some 89.1 percent of 1,320 full-power UHF stations employ antennas from either Dielectric or ERI and that other manufacturers will not be able to help meet demand for new antennas.¹²¹ According to FCC databases and the Schedule 381 data, the figures are closer to 85 percent of 1,307 full-power UHF stations.¹²² But, in any event, DTC is wrong to suggest that smaller manufacturers are ill-suited to meet a growing proportion of those stations' needs. DTC claims that smaller makers "primarily serve the Class A stations" and "specialize in antennas for lower-input power levels."¹²³ But the equipment UHF stations currently use suggests that a significant number of stations operate at lower input power levels.¹²⁴ Indeed, more than 40 percent of all UHF broadcast television stations in operation today run at less than 10 kW power.¹²⁵ With so many television broadcasters relying on lower-power facilities, manufacturers of lower-power antennas can and will make a meaningful contribution toward satisfying market demand following the incentive auction.

DTC claims further that several antenna manufacturers have exited the antenna business or closed their U.S. manufacturing facilities.¹²⁶ For example, DTC claims that Kathrein's U.S. manufacturing facility is closed.¹²⁷ That is incorrect. A Kathrein USA representative confirms that Kathrein USA continues to manufacture LPTV and Class A antennas in its Medford, Oregon facility. Kathrein also makes high-power UHF antennas in its German facility and serves as the U.S. distributor of Italian-made SIRA

¹²⁰ See *On Time and On Budget* at 20-21.

¹²¹ See DTC Response at 14.

¹²² See *On Time and On Budget* at App. B.

¹²³ DTC Response at 14.

¹²⁴ See *On Time and On Budget* at 50-51.

¹²⁵ See *id.* at 50.

¹²⁶ See DTC Response at 14.

¹²⁷ See *id.*

broadcast antennas. Kathrein is actively advertising its preparations for the broadcaster relocation.¹²⁸

Publicly available information similarly belies DTC's claim that other antenna manufacturers do not have experience building antennas for full-power stations. Propagation Systems, Inc. (PSI), for example, advertises that it designs antennas "for all power levels, directional or non-directional, pattern optimization, customization, and multi-station options."¹²⁹ And several of PSI's full-power broadcast station customers have recommended PSI's antennas, including WGNM-TV in Macon, Georgia.¹³⁰

DTC claims that its "recent interviews with Full Power broadcasters confirm that their selection for new antennas will remain with the two primary antenna suppliers."¹³¹ DTC did not identify any specific broadcasters, but even if DTC's claims were true, broadcasters' preferences are not a reason to extend the repacking timeline when companies like Kathrein, PSI and others are ready, willing, and able to meet demand.¹³²

The *On Time, On Budget* study described several antenna manufacturers' efforts to prepare for the broadcaster relocation, including investing hundreds of thousands of dollars in supplies and reopening a factory.¹³³ DTC responds that "the two primary antenna manufacturers . . . reported . . . that they will not make any significant increase to their capabilities until sufficient orders warrant the expansion."¹³⁴ DTC is incorrect.

Dielectric advertises that it has "been very busy updating software support tools, bringing on engineering and support staff, updating our plant and equipment, and

¹²⁸ See *It's Showtime: Broadcasters, Bidders and Equipment Vendors Prepare for 600 MHz Auction*, Kathrein Blog (Mar. 8, 2016), <http://kathreinusa.com/tag/600-mhz/>.

¹²⁹ PSI: TV Broadcast Antennas and Systems, Propagation Systems, Inc., <http://www.psibroadcast.com/tv.php> (last visited Apr. 21, 2016).

¹³⁰ See WGNM TV User Report, Propagation Systems, Inc., http://www.psibroadcast.com/downloads/WGNM_User_Report.pdf (last visited Apr. 21, 2016) (noting that WGNM-TV's decision to use a PSI antenna "was made because of a very competitive price and good recommendation of how well PSI antennas perform"). WGNM-TV noted in an attachment to its Schedule 381 filing that, contrary to the entries in the FCC's Consolidated Database System, WGNM-TV operates on a PSI antenna, not an ERI antenna.

¹³¹ DTC Response at 14.

¹³² DTC also failed to consider the multitude of antennas that will become available from broadcasters who exit the market or agree to channel share with other stations. Although the *On Time, On Budget* study did not rely on the significant number of antennas that will become available in this way, repurposing antennas could further reduce costs and manufacturing lead times, speeding up the repacking process.

¹³³ See *On Time and On Budget* at 21.

¹³⁴ See DTC Response at 15.

updating our marketing collateral to name a few things.”¹³⁵ The company also recently announced that it has added several engineers to its staff in anticipation of the spectrum repacking, and it has even prepared a “Guide to the FCC TV Channel Repack” for broadcast stations to review when preparing for the repacking process.¹³⁶ DTC’s anonymous sources are thus apparently at odds with Dielectric’s public statements.

Subsequent to DTC’s submission, antenna production capacity has only increased. For example, ERI recently announced that it had entered into a production capacity agreement with T-Mobile that “gives ERI the ability to ramp materials and accelerate antenna production capacity by 800% before the end of the year in anticipation of the end of the [incentive] auction.”¹³⁷ ERI stated that it “will immediately take the necessary step to expand manufacturing and test facilities as well as hire and train manufacturing, test, and installation personnel in advance of the increase in demand for television antennas, transmission line, and RF components that will be driven by the new television channel assignments issued by the FCC.”¹³⁸ ERI and T-Mobile’s partnership has allowed ERI to increase the number of crews from one to four and begin construction of new facilities.¹³⁹ ERI reports that the partnership will allow ERI to produce approximately 16 high-powered antennas every month.¹⁴⁰

Antenna manufacturers in the U.S. and around the globe have already begun preparing for the post-auction repacking opportunity. Large and small manufacturing outlets are buying parts, opening factories and advertising to broadcasters. Antenna supply will only continue to grow, and the resources available today are adequate to meet realistic projections of the number of antennas broadcasters will need after the auction.

¹³⁵ *Dielectric’s Guide to the FCC TV Channel Repack*, Dielectric, <http://www.dielectric.com/news/dielectrics-guide-to-the-fcc-tv-channel-repack/> (last visited Apr. 21, 2016) (“*Dielectric TV Channel Repack Guide*”).

¹³⁶ Emily Reigart, *Dielectric Creates R&D Team Ahead of Repack*, TV Technology (Mar. 29, 2016), <http://www.tvtechnology.com/news/0002/dielectric-creates-rd-team-ahead-of-repack/278284>; see also *Dielectric TV Channel Repack Guide*.

¹³⁷ Press Release, Electronic Research, Inc., ERI to Accelerate Completion of TV Channel Repack Post FCC’s Broadcast Incentive Auction (Apr. 18, 2016) (on file with author).

¹³⁸ *Id.*

¹³⁹ See *ERI and T-Mobile Deal for Crews and Facilities Puts 39-Month Repack Deadline Closer to Being Met*, WIRELESS ESTIMATOR, Apr. 21, 2016, <http://wirelessestimator.com/articles/2016/eri-and-t-mobile-deal-for-crews-and-facilities-puts-39-month-repack-deadline-closer-to-being-met/>.

¹⁴⁰ *Id.*

IV. THERE ARE ENOUGH SKILLED TOWER CREWS AVAILABLE TODAY TO COMPLETE THE REPACKING PROCESS ON TIME

A. DTC's Reasons For Disqualifying Certain Tower Firms Are Invalid

The *On Time, On Budget* study identifies 41 tower crews working today that can perform the work needed to implement the broadcaster repacking.¹⁴¹ The study identifies an additional 27 crews that firms expect to hire in the future once the relocation work begins in earnest.¹⁴² In December 2015 and January 2016, BTTi conducted in-depth interviews with each of the firms listed in the study to evaluate the firms' qualifications and staffing.¹⁴³

DTC disputes the qualifications of some of the tower firms identified in the study.¹⁴⁴ DTC contends that some of those firms do not own gin poles or other equipment.¹⁴⁵ But that is no basis for disqualifying those firms as available resources.

First, not every station antenna change will require the use of a gin pole. Gin poles are generally not necessary to install or remove side-mounted antennas. According to the Schedule 381 data, approximately 50 percent of broadcasters currently operate using a side-mounted antenna.¹⁴⁶

Second, a gin pole can be manufactured from start to finish in as little as two weeks. Indeed, at least one tower-climbing company not previously identified by DTC or the *On Time, On Budget* study—RIO Steel & Tower—maintains its own in-house metal design and fabrication shop, which allows the company to custom-assemble a gin pole for any site on very short notice.¹⁴⁷ “Everything from a single bracket to a complete communications tower can be produced in our shop,” RIO’s website explains.¹⁴⁸ Furthermore, at least one company is currently advertising gin poles (and hoists) for rent.¹⁴⁹

¹⁴¹ See *On Time and On Budget* at 39.

¹⁴² See *id.*

¹⁴³ See *id.* at 37.

¹⁴⁴ See DTC Response at 17-21.

¹⁴⁵ See *id.* at 18, App.

¹⁴⁶ See *On Time and On Budget* at 33.

¹⁴⁷ See About RIO – RIO Steel & Tower, <http://www.riosteel.com/about-rio/> (last visited Apr. 21, 2016).

¹⁴⁸ Fabrication – RIO Steel & Tower, <http://www.riosteel.com/fabrication/> (last visited Apr. 21, 2016).

¹⁴⁹ See Vertical Technology Safety, <http://www.verticalts.com/products.php> (last visited Apr. 21, 2016). Vertical Technology Services’ advertisement to rent out equipment casts doubt on DTC’s representation that “[t]he TV broadcast tower rigging companies that own this equipment . . . will not rent or share any of their equipment during the repack.” DTC Response at 18.

Third, contrary to DTC's implication, most stations' replacement antennas will weigh significantly less than 24,000 pounds. The heaviest UHF slot antenna in the Dielectric catalog weighs only 14,200 pounds as a channel 14 configuration and only 7,600 pounds as a channel 32 configuration.¹⁵⁰ Most broadcast antennas weigh less than 10,000 pounds. Indeed, side-mounted antennas are much lighter because they are supported at the top and at the bottom and do not require a heavy inner pipe for support.



***4,375-Pound Dielectric Slot Antenna, Side-Mounted at 1,450 feet
Cedar Hill, Texas (Spring 2012)***

The photograph depicts a typical broadcast television antenna. This unit is a high-power, side-mounted auxiliary antenna installed for a major broadcast station serving the Dallas, Texas market. At 4,375 pounds the antenna is not exactly light, but its weight is still roughly one-sixth of what DTC characterizes as typical for a broadcast television antenna.¹⁵¹ Contrary to DTC's claims, the majority of UHF stations today (58.1 percent) operate using side-mounted antennas similar to the antenna depicted above, and 74 percent of stations report using lighter, slot antennas similar to this one.¹⁵² Relocating stations that replace side-mounted, slot antennas like this one simply will not require the heavy rigging equipment DTC listed in its latest submission

¹⁵⁰ See DIELECTRIC, UHF ANTENNA FILING DATA 33 (describing the mechanical specifications for a Dielectric TFU-42J omnidirectional pylon antenna).

¹⁵¹ See DTC Response at 18 (claiming that only 21 tower crews "meet the qualification criteria to remove and install heavy antennas (up to 24,000 pounds) and attending rigid transmission lines").

¹⁵² *On Time and On Budget* at 34, 11.

necessary to install top-mounted antennas. For this reason, DTC's list of essential broadcast-construction equipment is overly inclusive for the vast majority of projects required for post-auction relocation.¹⁵³

DTC also cites NAB's telephone interviews of an undisclosed number of engineering directors from high-power TV station licensees.¹⁵⁴ The engineers contacted were supposedly unfamiliar with several of the tower crews the *On Time, On Budget* study identified.¹⁵⁵ But the engineers' responses are impossible to verify because their names and numbers are not provided. In any event, whether a particular broadcast station owner recognizes every tower firm on a vendor list says little about the skills and qualifications of the firms themselves, many of which have held leadership positions in prominent trade associations and distinguished themselves for outstanding service to television operations.¹⁵⁶ And it should come as no surprise that some broadcast engineers do not immediately recognize some of the tower firms listed in the study.¹⁵⁷ Many broadcast stations are run by larger companies that may have only recently assumed control of the station or may not be familiar with all of the nation's many tower climbing firms.¹⁵⁸ Finally, even if some firms are not well known, the solution would not be to ignore those resources, but rather to help publicize them by, for instance, creating a tower crew availability list. If broadcasters had access to a consolidated directory of service providers, they could judge the performance, experience, safety record and capabilities of each vendor for themselves.¹⁵⁹

So long as a tower firm is insured or bonded and has the experience and equipment to perform repacking work, it should count when determining whether adequate resources are available for broadcasters to relocate within the 39-month deadline. After the *On Time, On Budget* study was released, many additional vendors have approached us

¹⁵³ See DTC Response at App. For example, DTC included three-drum hoists in its list of equipment that all tower crews will likely need. Tower crews use a three-drum hoist when building a new tower or adding additional structural segments to an existing tower. One drum is used to move the gin pole up or down the tower to install additional structure segments. The industry refers to this drum as a jump line. The other two drums are used to raise the steel tower segments. They refer to these drums as the load line and tag line. Most repacking jobs will not, in fact, require a three-drum hoist. A two-drum hoist will suffice to replace a top-mounted antenna because the gin pole will remain stationary, and the load line both sets the gin pole and raises the antenna load. Most broadcasters will not need to add tower structure to replace their antennas and therefore the crews changing their antennas will not need three-drum hoists.

¹⁵⁴ See *id.* at 18.

¹⁵⁵ See *id.*

¹⁵⁶ See *On Time and On Budget* at 40-41.

¹⁵⁷ See DTC Response at 18.

¹⁵⁸ See *On Time and On Budget* at 15 ("In 2013, almost 300 full-power television stations changed ownership and consolidation has continued apace since then.").

¹⁵⁹ See *id.* at 47-48.

and asked to be included on the list of service providers. Most of these vendors can cite decades of experience in the field. Most also have the facilities, equipment and personnel to tackle even the handful of broadcast television towers that exceed 2,000 feet in height. The availability of tower-climbing crews makes a 39-month transition feasible.

B. Even By DTC's Own Count, There Are Enough Tower Climbing Resources To Meet The FCC's Repacking Deadline

The *On Time, On Budget* study lists several qualified tower crews that DTC's original report did not consider when forming its relocation estimates. DTC now agrees that at least 25 crews can help meet the repacking deadline.¹⁶⁰ Based on DTC's original estimate that each firm could provide 20 installation proposals per month during the construction permit application phase, the 25 crews that DTC now acknowledges are available could complete 1,500 applications during the first three months of the repacking period.¹⁶¹ The 42 crews that are actually available could complete proposals for 2,520 applications during that three-month window. Under both estimates, there are more than enough tower crews available to prepare proposals for the 1,200 stations, at most, that will repack following the auction.¹⁶² DTC's original estimate that only 360 antenna systems could be changed during the repacking window does not account for the number of additional crews that DTC now agrees are available.¹⁶³

Instead of revising its estimates to reflect those additional tower crews, DTC's response raises two points, neither of which is valid.

First, DTC singles out four of the tower firms identified in the *On Time, On Budget* study because of their ostensibly regional footprints and lighter rigging equipment.¹⁶⁴ Most tower companies, by necessity, must travel wherever in the country the work is. But even if the four firms DTC identifies—located in Tennessee, Florida, Arizona and California—addressed demand only in certain regions, that would still allow other tower-

¹⁶⁰ See DTC Response at 19-20.

¹⁶¹ See DTC Report at 31.

¹⁶² See *On Time and On Budget* at 49.

¹⁶³ See DTC Report at 32; see also DTC Response. The *On Time, On Budget* study detailed the qualifications of each of the firms employing the 41 tower crews available to assist with antenna replacement work. See *On Time and On Budget* at 37-41. Using DTC's unrealistically conservative estimate that a crew will only complete between eight and nine antenna change projects a year, the study estimated that the 41 available crews could complete at least 900 antenna change-outs during the last 33 months of the repacking schedule. See *id.* at 43. But even using DTC's recently adjusted baseline for the number of tower crews qualified to perform repacking work increases DTC's original estimate from 360 jobs to approximately 585 jobs during the last 33 months of the repacking, a 61 percent increase.

¹⁶⁴ See DTC Response at 18, 20.

rigging companies, which operate on a national scale, to meet demand elsewhere. Moreover, a majority of station relocations will not require the heavy-duty equipment listed in the Appendix to DTC's response.

Second, DTC's response omits, without explanation, two companies that it included in its initial report: Tower Systems, Inc. and Vertical Technology Services, LLC.¹⁶⁵ Both companies remain in business and are advertising their ability to provide tall-tower services.¹⁶⁶

Below is a table showing the number of crews that DTC now acknowledges are available, along with the number of crews that are actually available. Shaded boxes indicate tower installation firms that DTC claims will operate only on a regional basis:

¹⁶⁵ Compare DTC Report at 57, with DTC Response at 19-20.

¹⁶⁶ See *Tower Installation*, Tower Systems Inc., <http://www.towersystems.com/services/towerinstall.php> (last visited Apr. 21, 2016); Vertical Technology Services, <http://www.verticalts.com> (last visited Apr. 21, 2016).

Number of Tower Crews Available Today				
Company	Location	Website	Agreed Crews	Actual Current Crews
Advanced Tower Services, Inc.	Albuquerque, NM	www.advtower.com	-	1
Beckman Tower	Fresno, CA	www.beckmantower.com	1	1
Coast To Coast Tower Service, Inc.	Waxahachie, TX	www.ctctower.com	3	3
Cycle Tower Service LLC	Bristol, VA	www.absolutecom.com/cycletower/	1	1
Deep South Communications	Baton Rouge, LA	www.deepsouthcommunications.com	-	2
Electronics Research, Inc.	Evansville, IN	www.eriinc.com	1	1
FDH Velocitel	Northbrook, IL	www.fdhvelocitel.com	3	3
Great Lakes Tower & Antenna Co., Inc.	Flat Rock, MI	www.greatlakestower.com	-	3
Great Plains Towers	Fargo, ND	www.gptowers.com	-	1
Grundy Telcom Integration, Inc.	Ontario, CN	www.grundytel.com	2	2
H.C. Jeffries Tower Co., Inc.	Porter, TX	www.hcjeffries.com	2	2
Kelley RF Service, Inc.	Titusville, FL	www.kelleyrf.com	-	1
LIT Systems	Chattanooga, TN	www.litsystems.com	1	1
Northeast Towers, Inc.	Farmington, CT	www.northeasttowers.com	1	1
P&R Tower, Co.	Sacramento, CA	www.pandrtower.com	-	2
Precision Communications, Inc.	Grove, OK	www.pcitower.com	1	3
Quality Tower Erectors, Inc.	Largo, FL	www.qualitytower.com	1	2
RIO Steel & Tower	Alvarado, TX	www.riosteel.com	-	5
Seacomm Erectors, Inc.	Sultan, WA	www.seacomm.com	1	1
Sioux Falls Tower & Communications	Sioux Falls, SD	www.siouxfallstower.com	2	2
Tower King II, Inc.	Cedar Hill, TX	www.towerking2.com	2	2
Tower Systems, Inc.	Watertown, SD; Winter Park, FL	www.towersystems.com	-	2
United States Tower Services, Ltd.	Ijamsville, MD	www.ustowerservices.com	-	2
Vertical Technology Services, LLC	Hagerstown, MD	www.verticalts.com	-	2
Wallace Tower Specialists Co.	Franklin, AR	www.wallacetower.com	1	1
Wallen Communications, LLC	Tucson, AZ	www.wallencom.com	1	1
Wireless Infrastructure Services	Corona, CA	www.wirelessinfrastructureservices.com	1	1
Worldwide Communications Consultants, Inc.	Newburgh, IN	www.wctower.com	-	2
Total:			25	51¹⁶⁷

¹⁶⁷ The *On Time, On Budget* study did not include RIO Steel & Tower, United States Tower Services, Ltd., Wireless Infrastructure Services or Worldwide Communications Consultants, Inc. in its list of qualified tower crews. Worldwide Communications Consultants would likely work on a regional basis.

The totals listed in the table above are conservative estimates. Not included in the table are firms that are available to assist with some aspects of the repacking work. For example, ACME RF Incorporated has experience installing full-power and low-power antennas weighing up to 5,000 pounds onto shorter towers.¹⁶⁸ ACME is not included in the list of tower crews in the table because it mostly contracts out its tall tower work. But ACME can nonetheless contribute to the repacking process.

DTC not only understated the number of available tower crews, but also overstated the amount of time it will take each crew on average to complete an antenna replacement project. On April 12, 2016, broadcast installation experts from RIO Steel & Tower¹⁶⁹ and Grundy Telcom Integration, Inc.¹⁷⁰ were interviewed and provided estimates of the length of time necessary to complete different types of television broadcast construction projects. Both RIO and Grundy have vast experience in the broadcast industry and have provided extensive tower-climbing, installation, construction and support services for the full range of broadcast tower heights. They have worked throughout North America in a variety of different environmental conditions using many different types of cables, antennas, transmitters and related equipment.¹⁷¹

The broadcast tower-climbing experts from RIO and Grundy discussed the factors that make a meaningful difference in the time required to complete broadcast tower construction projects. While they stressed that no project is typical, they said the primary factors driving the amount of time necessary to complete a project are tower height, the type of cables, the type of antenna and the type of antenna mount. The height of a given tower is usually the single most significant factor in estimating the duration of a television broadcasting construction project. Other factors can slightly increase or decrease the amount of time required for a project. According to the experts from RIO and Grundy, for example, a broadcast installation that uses semi-flexible coaxial cable or “flex cable” will typically require five fewer days than one that requires them to install rigid coaxial transmission lines. As its name implies, flex cable can accommodate bends and allow for a single, continuous run from an equipment room to the antenna location without necessarily having to install internal couplings between segments.¹⁷² Rigid cable, by comparison, relies on short, straight lengths that

¹⁶⁸ See Acme RF Incorporated, www.acmerf.com (last visited Apr. 21, 2016).

¹⁶⁹ See Services – RIO Steel & Tower, <http://www.riosteel.com/services/> (last visited Apr. 21, 2016). For RIO, we spoke with Paul Walters, Project Manager, Keith Cendrick, Vice President, and Vance Hapeman, Sales and Marketing Director.

¹⁷⁰ See Our Company – Grundy Telecom Integration Inc., <http://www.grundytel.com/#!our-company/c1vtg> (last visited Apr. 21, 2016). For Grundy, we spoke with Brian Grundy, President.

¹⁷¹ See T-Mobile April 12, 2016 *Ex Parte* at 1-2.

¹⁷² See Mick Bennett, *Selecting Transmission Lines*, TVTECHNOLOGY (Oct. 1, 2008), available at <http://www.tvtechnology.com/rf-technology/0146/selecting-transmission-lines/257375>.

require connections between sections at flanged joints on either end; each segment of rigid cable must be bolted to the tower with spring-loaded hangers to accommodate the expansion and contraction that will occur with changes in temperature.¹⁷³ RIO and Grundy similarly agreed that they find slot antennas typically easier to install than panel antennas. While the difference in time required to install a slot versus a panel antenna can be less pronounced than the difference in time between flex and rigid cable installations, they said panel antennas are somewhat more complex because panel antennas may require partial disassembly to allow for installation or may need small adjustments once placed on the tower.

RIO and Grundy use factors such as tower height, cabling type and antenna type in the ordinary course of their business to estimate project expenses and to manage their workers' schedules. RIO and Grundy explained that if they underestimate the amount of time a project will require they lose money. When estimating installation times and expenses for potential clients, representatives from RIO and Grundy said they use the tower-height as the primary demarcation point for estimating the time and resources necessary on a project. Without discussing company-specific rates, RIO and Grundy said they generally begin the time-estimation process by assessing the antenna height and placing it into one of four rough categories of difficulty. A 500-foot-tall tower is, in their experience, a relatively simple project that does not consume much time or manpower. The time required for a project increases for towers between 500 and 1,000 feet, and increases again for towers of 1,000 to 2,000 feet. Work on a 2,000-foot-tall or taller tower is among the most complicated engineering projects these companies face and therefore would consume the most time.

The tables below separate antenna heights into the four general height categories that RIO and Grundy use in the ordinary course of business and then takes into account other factors RIO and Grundy identified as increasing or decreasing time on a project, such as the types of antennas and cabling used as well as the need to convert an auxiliary system to a new channel. The date ranges were summed to generate a typical minimum and maximum number of working days required to provide construction services for each category of broadcast operation.¹⁷⁴ The column in the far right of the table then shows the percentage of relocation-eligible facilities for each category of broadcast construction.

¹⁷³ *Id.*

¹⁷⁴ Environmental factors, such as adverse wind conditions, could increase the total number of days spent on a site, and an unanticipated lack of key parts, permits or other prerequisites for construction could require the demobilization of the crew until the condition is abated.

1) 500-foot tower, side-mount, rigid cable, removing old line		Percentage of relocation-eligible antennas identified on FCC Form 2100, Schedule 381
UHF Slot Antenna	10 working days ¹⁷⁵	43% are 500-foot-tall or shorter
Panel Antenna	15 working days	
Flex Cable	Decreases time for either antenna type by five working days	
Auxiliary System	Adds four working days	
	Minimum Time: Five working days Maximum Time: 15 working days ¹⁷⁶	

2) 500-1,000-foot tower, side-mount, rigid cable, removing old line		Percentage of relocation-eligible antennas identified on FCC Form 2100, Schedule 381
UHF Slot Antenna	15 working days	25% are 500-1,000-foot tall
Panel Antenna	18 working days	
Auxiliary System	Adds five working days	
	Minimum Time: 15 working days Maximum Time: 23 working days	

¹⁷⁵ All estimates based on a telephone interview with tower climbing experts from RIO Steel & Tower and Grundy Telcom Integration, Inc. on April 12, 2016.

¹⁷⁶ Timelines could vary based on site conditions, weather, and other factors, which can slow or facilitate the process.

3) 1,000-2000-foot tower, top-mount, rigid cable, removing old line		Percentage of relocation-eligible antennas identified on FCC Form 2100, Schedule 381
Primary Antenna (Slot or Panel) ¹⁷⁷	15-25 working days	31% are 1,000-2,000-foot-tall
Auxiliary System	Adds three working days	
	Minimum Time: 15 working days Maximum Time: 28 working days	

4) 2,000-foot tower, top-mount, rigid cable, removing old line		Percentage of relocation-eligible antennas identified on FCC Form 2100, Schedule 381
Primary Antenna (Slot or Panel)	35-40 working days	0.8% are 2,000-foot-tall or taller
Auxiliary System	Adds three working days	
	Minimum Time: 35 working days Maximum Time: 43 working days	

As demonstrated above, 43 percent of all relocation-eligible antennas fall into the least time-consuming category of relocation and should generally require somewhere between five and 15 working days of construction to install the equipment necessary to relocate to a new channel. An additional 25 percent of relocation-eligible antennas would require construction of 15 to 23 working days to support relocation. Taken together, more than two-thirds of all antennas for relocation-eligible licensees will require less than four weeks of construction to transition to a new channel and some 99 percent of relocation-eligible facilities can be replaced in less than six weeks, even assuming the projects include auxiliary systems, rigid cable, removal of old line and work on up to 2,000-foot-tall towers.

¹⁷⁷ At higher elevations, the difference between installing a panel or slot antenna is small to non-existent because either type of antenna will tend to require the use of a gin pole. The amount of time necessary to erect a gin pole on the tower, hoist the top-mounted antenna to the top and then remove the gin pole once the work is complete tends to overtake the time savings associated with not having to configure a panel antenna array,

The estimates developed in conjunction with RIO and Grundy are substantially shorter than those DTC provided to the FCC last year. DTC estimated that every antenna change project necessary to complete a broadcast relocation project would consume at least six weeks.¹⁷⁸ But, as shown above, construction of that duration would only apply to broadcast facilities on 2,000-foot-tall or taller towers, which comprise just 0.8 percent of the total relocation-eligible facilities. DTC also stated that “most high-power stations will require work to be done on towers that are more than 800 feet.”¹⁷⁹ But DTC erred here, too. Based on the FCC Form 2100, Schedule 381 data that broadcasters submitted to the FCC, nearly 60 percent of relocation-eligible antennas are sited at a height less than 800 feet tall.

DTC’s estimates for the number of available tower crews and the duration of broadcast construction are flawed. DTC created unnecessary gating criteria to discount the number of qualified tower crews available to assist with the repacking process. DTC did not consider how predictable differences in the complexity of antenna projects would affect the time necessary to complete broadcast relocation. DTC also did not model the distribution of those variations in complexity based on broadcaster-provided data about relocation-eligible systems that was available to DTC at the time it prepared its report. DTC instead assumed a near-worst-case relocation time period and then applied that lengthy time period uniformly across all types of broadcast relocation projects using a reduced number of tower crews. As a result, DTC systematically overestimated the amount of time required to support the vast majority of individual broadcast relocation projects as well as the time needed to complete the 600 MHz repacking process as a whole.

C. The Supply Of Tower Climbing Resources Will Only Grow

The current number of available tower crews is enough to allow the broadcast industry to repack within the FCC’s relocation schedule. And the likelihood that the industry will meet the deadline will only increase as more tower crews are trained to meet the growing demand for services going into and following the auction.

DTC’s response suggests that the current number of qualified tower climbing crews is frozen in time.¹⁸⁰ DTC quotes one tower industry representative as stating that “[t]here is no school to go to for gin pole training. It’s hands-on training.”¹⁸¹ But in fact there are several programs today that provide instruction on the use of gin poles. For example,

¹⁷⁸ DTC Report at 31.

¹⁷⁹ *Id.* at 41.

¹⁸⁰ See DTC Response at 20-21.

¹⁸¹ *Id.* at 21.

Safety LMS offers a one-day course titled “Gin Pole Theory and Application,” which teaches “the design criteria of a gin pole and how the gin pole is used” under the TIA-PN-4860 Gin Pole standard.¹⁸² Although on-the-job training is important, DTC understates the resources available to train new and existing tower climbers. DTC’s insistence that the marketplace will not react to growing demand is contrary to logic and the available evidence. In addition, our interviews with several tower-climbing companies reveal that there may be a number of qualified tower climbers available to do the work that are not currently identified as available because these vendors temporarily moved into other related work in response to the drop in demand for television broadcast tower work since the DTV transition.¹⁸³

¹⁸² *Gin Pole Theory and Application*, Safety LMS, <http://safetylms.com/training/gin-pole-theory-and-application/> (last visited Apr. 21, 2016); see also *Safety LMS Tower Erection Gin Pole Operations Course*, Safety LMS, <http://www.gmesupply.com/safety-lms-gin-pole-operations-course> (last visited Apr. 21, 2016) (advertising a similar one-day course).

¹⁸³ See T-Mobile April 12, 2016 *Ex Parte* at 2.

V. THERE ARE ENOUGH QUALIFIED RF CONSULTING ENGINEERS AND OTHER CONSULTANTS AVAILABLE TO COMPLETE THE REPACKING PROCESS ON TIME

A. Adequate RF Consulting Engineers Are Available To Complete The Repacking Process On Time

Through research conducted in January and February 2016, Hammett & Edison estimated that 53 RF consulting engineers are available to assist with repacking work.¹⁸⁴ According to the *On Time, On Budget* study, that is enough to meet the broadcaster relocation deadline.¹⁸⁵

DTC's response contends that several firms identified in the study are unqualified,¹⁸⁶ and reduces its own initial calculations from 35 qualified engineers down to 29.¹⁸⁷ In light of DTC's response, Hammett & Edison conducted phone and email interviews in March and April 2016 with the firms listed in the table below to reassess the number of engineers each firm employs. With respect to several of the firms, Hammett & Edison and DTC agree on the number of engineers employed. With respect to the remaining firms, however, DTC understates the actual number of available consultants. For example, Hammett & Edison interviewed KGI Broadcast Engineering Consultants' two engineers, who were surprised to learn from DTC's response that one of them is retired and the other is ill—neither of which is the case.¹⁸⁸ DTC also insinuates that the *On Time, On Budget* study held out a dead man as qualified to perform RF engineering work.¹⁸⁹ But though the study listed D.L. Markley & Associates as an available RF consulting engineering firm, it never suggested that D.L. Markley himself continued to provide RF engineering services. Instead, the study, as an estimate, attributed two engineers to the firm.¹⁹⁰ As DTC's response notes, one engineer worked for D.L. Markley & Associates until very recently.¹⁹¹ Additional research conducted in March 2016 proves the existence of another engineer.¹⁹² The *On Time, On Budget* study

¹⁸⁴ See *On Time and On Budget* at 24-25.

¹⁸⁵ See *id.* at 22-27.

¹⁸⁶ See DTC Response at 22-23.

¹⁸⁷ See *id.* at 22.

¹⁸⁸ See *id.* at 23.

¹⁸⁹ See *id.* (discussing D.L. Markley & Associates).

¹⁹⁰ See *On Time and On Budget* at 24.

¹⁹¹ See DTC Response at 23 (noting that Jeremy Ruck departed the firm).

¹⁹² Charles Ellis consults for D.L. Markley & Associates. Mr. Ellis also owns his own firm, which the *On Time, On Budget* study did not include in its list of engineering firms. Mr. Ellis's firm employs one other RF engineer qualified to perform broadcast relocation work.

thoroughly researched the capabilities of each RF engineering firm and did not advertise the services of the deceased.

Below is an updated table of available RF engineering consultants. The table provides the date several of the firms were contacted and the person at the firms that verified the firm's capabilities.¹⁹³ Shaded boxes indicate firms with respect to which Hammett & Edison and DTC agree on the number of RF consulting engineers employed:

Previously Identified RF Consulting Engineering Firms			
Consulting Firm	Date of Contact	Point of Contact	Number of Available Engineers
Carl T. Jones Corp.	3/23/16	Tom Jones	6
Cavell, Mertz & Associates	3/23/16	Garrison Cavell	3
Chesapeake RF Consultants, LLP	-	-	1
Cohen, Dippell & Everist, P.C.	3/23/16	Donald Everist	3
Communications Technologies Inc.	-	-	2
D.L. Markley & Associates	3/24/16	Charles Ellis	1
duTreil, Lundin & Rackley, Inc.	3/25/16	Bob duTreil	2
Graham Brock	3/22/16	Cathy McKay	1
Greg Best Consulting, Inc.	-	-	1
Hammett & Edison, Inc.			4
Hatfield & Dawson	-	-	1
Kessler & Gehman	3/23/16	Bob Gehman	4
KGI Broadcast Engineering Consultants	3/24/16	Bob Guill	2
Marsand, Inc.	-	-	2
Meintel Sgrignoli & Wallace	3/23/16	Dennis Wallace	2
Merrill Weiss Group, LLC	-	-	1
Mullaney Engineering, Inc.	3/22/16	John Mullaney	2
Munn Reese, Inc.	3/31/16	Don Baad	2
Jeremy Ruck	-	-	1
Smith & Fisher	-	-	2
V-Soft Communications	-	-	1
Vir James PC	3/23/16	Tim Cutforth	1
Wind River Group, Inc.	4/9/16	Jim McDonald	2
Total:			47

¹⁹³ Firms for which we and DTC agreed on the number of available engineers without the need for any additional investigation were not contacted.

We have identified several additional RF consulting engineering firms not included in the *On Time, On Budget* study or the table. DeLawder Communications, Inc., for example, specializes in broadcast services and began consulting on FCC matters in 1994.¹⁹⁴ Since then, DeLawder has filed approximately 200 FCC applications on behalf of broadcasters and prepared more than 1,000 applications for more than 100 separate clients.¹⁹⁵ Evans Engineering Solutions, located in Thiensville, Wisconsin, employs two RF engineers.¹⁹⁶ And Mid-State Consultants of Nephi, Utah, employs one RF engineer qualified to perform television station engineering work and could repurpose two or three additional engineers from within the organization.¹⁹⁷

Below is a table of newly identified RF consulting engineering firms, including the name of the firm, the date the firm was contacted and the number of engineers the firm currently employs:

Newly Identified RF Consulting Engineering Firms			
Consulting Firm	Date of Contact	Point of Contact	Number of Available Engineers
DeLawder Communications, Inc.	3/3/16	Darryl K. DeLawder	1
Evans Engineering Solutions	3/28/16	Bob Evans	2
Kube Broadcast Consulting, Inc.	4/12/16	Wayne Kube	1
Mark G. Fehlig, P.E.	4/5/16	Mark Fehlig	1
Mid-State Consultants, Inc.	3/31/16	Benjamin Pidek	1
Total:			6
Grand Total (Including Previously Identified Firms):			53

Finally, several firms, including Carl T. Jones Corp., Cavell, Mertz & Associates, D.L. Markley & Associates, duTreil, Lundin & Rackley, Inc., KGI Broadcast Engineering, Mid-State Consultants, Munn-Reese, and Hammett & Edison, indicated that they could readily reallocate or expand their current workforce. Based on its interviews Hammett & Edison expects between 14 and 19 additional RF engineers to become available for repacking work in the future. Hammett & Edison therefore continues to discover

¹⁹⁴ See *Company Profile*, DeLawder Communications, Inc., <http://www.delawder.com/The%20Company.htm> (last visited Apr. 21, 2016).

¹⁹⁵ See *id.*

¹⁹⁶ See Evans Engineering Solutions, <http://evansengsolutions.com/> (last visited Apr. 21, 2016).

¹⁹⁷ See Mid-State Consultants, <http://www.mscon.com/> (last visited Apr. 21, 2016).

additional engineering resources available to meet demand for RF consulting services during the repacking process.

DTC acknowledges that its original submission omitted several consulting firms,¹⁹⁸ but it continues to undercount the number of firms available and misrepresent the qualifications of others. Hammett & Edison's extensive research and direct contact with the vast majority of the firms identified in the *On Time, On Budget* study proves that the available supply of RF consulting engineers will not cause a delay in the repacking deadline.

B. More Than Enough Structural Engineers Are Available To Assist With The Repacking Process

In the *On Time, On Budget* study, BTTi identified a dozen structural engineering firms capable of performing broadcaster relocation consulting work in addition to the seven firms DTC identified in its original submission.¹⁹⁹ BTTi conducted phone interviews in December 2015 and January 2016 with each of the additional firms it identified to confirm the qualifications of each company.²⁰⁰ In its response, DTC claims that the study contained three "misrepresentations" of various structural engineering firms' capabilities or current operating status.²⁰¹

First, DTC says that Consolidated Engineering and Griswold Towers have merged.²⁰² That is false. Gray Hodge and Bill Griswold, the respective owners of Consolidated Engineering and Griswold Towers, each confirmed to BTTi that their companies are separately owned and operated and have no plans to merge.

Second, DTC claims that one of the firms that the study identified primarily designs and sells software for structural engineers. But DTC fails to name the firm, so we can respond only by reiterating that BTTi confirmed each firm's capabilities through phone interviews.²⁰³

Third, DTC argues that one of the firms that the study identified "primarily works only on towers with a maximum of 500-700 feet of height."²⁰⁴ But once again, DTC fails to

¹⁹⁸ See DTC Response at 22.

¹⁹⁹ See *On Time and On Budget* at 35.

²⁰⁰ See *id.*

²⁰¹ DTC Response at 23.

²⁰² See *id.*

²⁰³ See *On Time and On Budget* at 35-36.

²⁰⁴ DTC Response at 23.

identify a specific firm. In any event, DTC does not say this firm works *exclusively* on towers between 500- and 700-foot-tall; the firm presumably works on taller towers some of the time. Moreover, DTC itself acknowledges that “in some cases . . . short towers present a greater degree of difficulty for antenna installation, due to variable elevations and limited space for towers in mountainous regions.”²⁰⁵ DTC cannot laud the skill required to support shorter towers in one breath only to discount such skill in another.

Aside from these unsubstantiated critiques, DTC’s response makes no attempt to explain why it failed to include the dozen additional firms the *On Time, On Budget* study identified or to update its construction permit planning findings based on the additional firms. For example, DTC failed to include Paul J. Ford & Co. in its list of structural engineering firms.²⁰⁶ BTTi interviewed John Werner, Project Manager for Paul J. Ford & Co. in April 2016. Mr. Werner explained to BTTi that Paul J. Ford has 81 employees spread across several divisions. Paul J. Ford employs 31 people in its tall-tower division, including eight professional engineers. DTC’s failure to account for Paul J. Ford & Co.’s significant workforce is only one example of the dubious assumptions DTC used to predict that structural engineer supply would delay the construction permit application phase of the repacking.²⁰⁷

Additionally, several other structural engineering firms have made their skills and availability known to the authors since release of the original *On Time, On Budget* study. VM Structural Engineering in Ontario, Canada was identified as another structural engineering firm qualified to perform repacking work. BTTi contacted VM Structural Engineering in April 2016, and determined that the firm currently employs three professional engineers, one of which is licensed in 23 states as well as Canada. VM Structural Engineering has worked in the U.S. and Canada on tall towers for approximately 20 years. Tower Engineering Professionals, Inc. is yet another structural engineering firm not included in the *On Time, On Budget* study that could perform sophisticated structural-engineering work.²⁰⁸

²⁰⁵ *Id.* at 18.

²⁰⁶ See DTC Report at 58.

²⁰⁷ *Id.* at 22, 39. Another example is DTC’s failure to include FDH Velocitel, which “designed, constructed and deployed . . . over half of the broadcast towers standing in the United States today” in its list of structural engineering firms. See *Structural Engineering*, FDH Velocitel, <http://www.fdhvelocitel.com/services/engineering/structural-engineering/> (last visited Apr. 21, 2016). FDH Velocitel is “uniquely positioned” to help support the repacking process because it “will be able to work with the original tower drawings and (in some instances) with the original engineering, design and field crews.” FDH Velocitel, FDH Velocitel Acquires Assets of Structural Engineering Firm Stainless, LLC, PR Newswire Association LLC (Feb. 24, 2015, 9:00 AM), <http://www.prnewswire.com/news-releases/fdh-velocitel-acquires-assets-of-structural-engineering-firm-stainless-llc-300040248.html>.

²⁰⁸ See, e.g., Tower Engineering Professionals, Inc., <http://tepgroup.net/services/telecommunications/structural-engineering> (last visited Apr. 24, 2016).

There are enough structural engineers to allow broadcasters to complete the repacking process within the 39-month deadline.

VI. TRANSMITTERS WILL COME IN ON TIME AND WITHIN BUDGET

Broadcasters that need replacement transmitters will have access to sufficient supply during the 39-month repacking schedule. DTC does not assert otherwise.²⁰⁹

DTC instead contends that the *On Time, On Budget* study underestimates the costs for replacing all of the primary and standby transmitters broadcasters will need.²¹⁰ According to DTC, 36 percent of all full-power UHF stations currently own and maintain a backup transmitter.²¹¹ But as DTC acknowledges, its estimate of the number of stations that have a backup transmitter is simply that—an estimate. To our knowledge, there is no publicly available information on the number of stations that own and operate backup transmitters.

Even assuming for the sake of argument that DTC's 36-percent estimate is accurate, applying that figure to the total number of full-power stations on-air today would still overstate the number of stations that will need to replace their backup transmitters.²¹² That is because a significant number of stations will either exit the market or are already operating below the clearing target. None of the exiting stations will need a new backup (or primary) transmitter and only a limited percentage of the stations operating below the clearing target will need new transmitters.

In any event, the *On Time, On Budget* study accounts for all of the costs for backup transmitters in DTC's initial estimates.²¹³ The study expressly “relied on DTC's estimates for the number of stations requiring back up transmitters” and *included* the costs of purchasing new backup transmitters found in DTC's cost projections.²¹⁴ DTC is wrong to suggest that the *On Time, On Budget* study's cost estimates do not include allocations for backup transmitters.

The *On Time, On Budget* study does reduce DTC's transmitter-related cost projections in two ways: (1) it employs a more granular analysis of the power level of the transmitters that stations will need in light of their current operations; and (2) it takes into account the number of stations that today use a solid state transmitter.²¹⁵

²⁰⁹ See DTC Report at 28 (“It is not anticipated that transmitter production and delivery will be a time-limiting factor during the repacking if stations promptly order their equipment after receiving their CP.”).

²¹⁰ DTC Response at 23-25.

²¹¹ See *id.* at 23-24.

²¹² See *id.* at 24.

²¹³ DTC Report at 48, 50.

²¹⁴ *On Time and On Budget* at 52.

²¹⁵ See *id.* at 49-54.

With respect to the first point, the study found that, contrary to DTC's assumptions, 90 percent of all UHF stations would not need to replace their transmission systems with 40 kW (or higher) transmitters.²¹⁶ Based on broadcasters' Schedule 381 submissions, 68 percent of UHF stations use transmitters of less than 40 kW and over 40 percent of UHF stations use transmitters that operate at less than 10 kW power.²¹⁷ Given that replacing lower-power transmitters costs less than replacing higher-power ones, DTC's cost estimate is too high, by between \$257 million and \$313 million.²¹⁸ DTC's response does not dispute that fact.

With respect to the second point, the study *conservatively* estimates that 20 percent of stations that are reassigned a new channel use a solid-state transmitter that could be reused on their new channel assignments.²¹⁹ DTC argues that that figure is too high.²²⁰ But DTC acknowledges that approximately 150 full power stations operate using frequency-agile transmitters that they will not need to replace and implicitly concedes that additional stations will be able to reuse their channel-banded, solid-state transmitters.²²¹ Indeed, GatesAir, the nation's largest manufacturer of TV transmitters, advertises that transmitters that are not fully broadband are sometimes capable of re-channelization.²²² Moreover, DTC fails to address the fact that some stations could purchase compatible primary or secondary transmitters from other stations that will be going off of the air.

DTC further claims that "[p]utting a station off air for more than a few hours overnight represents an unacceptable interruption of its business" and therefore "any modifications that can't be made in this time period will result in the need of a new transmitter."²²³ But DTC fails to account for the number of stations that currently have

²¹⁶ See *id.* at 50-52. The study estimates that DTC overstated costs by between \$257 million and \$313 million based on transmitter power. See *id.* at 49. Correcting for appropriate transmitter power levels produces the largest reduction in DTC's cost estimate other than correcting for the likely number of stations the FCC will need to repack. See *id.*

²¹⁷ See *id.* at 50.

²¹⁸ See *id.* at 52. To be conservative, our study does *not* further reduce costs based on the heavy-duty connecting cables DTC claimed broadcasters would need to purchase in conjunction with their overpowered transmitters, even though these savings would result in additional cost savings beyond our projections. See *id.*

²¹⁹ See *id.* at 54.

²²⁰ See DTC Response at 24.

²²¹ See *id.* at 25.

²²² See *Spectrum Repack: Transmitter and Monitoring*, GatesAir, <http://www.gatesair.com/solutions/spectrum-repack-transmitter-and-monitoring> (last visited Apr. 21, 2016).

²²³ DTC Response at 25.

standby transmitters. If a station has a primary transmitter capable of re-channelization and a standby transmitter, there is no reason why the station cannot operate using its standby transmitter for longer than a few hours while the primary transmitter is re-channelized.

In short, the *On Time, On Budget* study uses broadcaster-certified data to draw more accurate estimates of relocation costs based on broadcasters' current transmission systems. The available evidence demonstrates that replacing relocating broadcasters' transmitters will not slow the repacking schedule or break the budget.

CONCLUSION

Wireless infrastructure is the foundation for the revolution in connectivity that has helped fuel America's economic dynamism and technological leadership for generations. The 600 MHz incentive auction and the broadcast repacking that will follow it have the potential to propel continued investment, growth and innovation in both the broadband and broadcast sectors of America's technology economy.

Achieving the goal of a timely, cost effective transition will not be without its challenges. The broadcast industry relies on a complex, unevenly distributed supply chain of domestic and international vendors that must operate in an environment filled with operational constraints that increase the complexity and risk of any major change in infrastructure deployment. But nothing in DTC's most recent submission has cast any doubt on the *On Time, On Budget* study's ultimate conclusion that broadcasters can complete the post-auction relocation process within 39 months and under \$1.75 billion.

Our analysis accounted for the full scope of activities necessary to support the broadcast transition, including sourcing, distribution and logistics as well as the less predictable elements that can complicate individual site relocations, such as the time needed to negotiate with tower owners and secure local zoning approval. We also allowed for the capacity of different components of the transition process to interact with one another in ways that may increase volatility or heighten the risk of delay.

Site-specific disruptions will inevitably occur. But broadcast station owners are adept at managing complexity and have a deep understanding of the markets in which they operate. Their vendors are similarly agile and flexible. They can redirect resources dynamically around bottlenecks that may emerge to ensure on time performance. The available supply of broadcast support can also satisfy the actual demand for those goods and services that the industry will generate following the incentive auction. Indeed, our end-to-end analysis of the broadcast relocation process found ample capacity at every stage of the process: from radiofrequency engineering, to structural engineering, to antenna manufacturing, to transmitter production to tower crews.

While complexity and risk is inevitable in any project on the scale of the 600 MHz broadcast transition, the available quantitative and qualitative evidence about broadcast demand and industry supply demonstrate that the broadcast industry is up to the challenge. Wireless service providers have also committed to collaborating with television broadcasters and the FCC to ensure a smooth and timely broadcast transition following the 600 MHz incentive auction. Working together and with the FCC's continued leadership, the available evidence demonstrates that the post-auction repacking and relocation process can occur on time and on budget.

Appendix A - UHF Broadband Antenna Make, Model and Broadband Capability Data						
Call Sign	Channel	City	State	Antenna Make	Antenna Model	Antenna Fully Broadband?
KPXD-TV	42	ARLINGTON	TX	AD	A/CUK 40671/1	Yes
WXAX-CD	26	CLEARWATER	FL	ALD	ATU.08.07.420	Yes
KENW	32	PORTALES	NM	AND	ABBP10H3-HTO-32/55	Yes
W33BY-D	33	DETROIT	MI	ATC	ATC-BPH8C2	Yes
KABH-CD	17	BEND	OR	COE	CO-24U/8	Yes
KORY-CD	15	EUGENE	OR	COE	CO-24U/8	Yes
KORS-CD	16	PORTLAND	OR	COE	CO-24U/8	Yes
KOXI-CD	20	PORTLAND	OR	COE	CO-24U/8	Yes
KORK-CD	35	PORTLAND	OR	COE	CO-24U/8	Yes
KKEI-CD	38	PORTLAND	OR	COE	CO-24U/8	Yes
KOXO-CD	41	PORTLAND	OR	COE	CO-24U/8	Yes
WEFS	30	COCOA	FL	DIE	888	Yes
KCDT	45	COEUR D'ALENE	ID	DIE	881-8	Yes
WINP-TV	38	PITTSBURGH	PA	DIE	TCI 888-32	Yes
KUAT-TV	30	TUCSON	AZ	DIE	TUA 04-6/24H-1-R-B	Yes
WVTA	24	WINDSOR	VT	DIE	TUA-04-10/40H-1-R-T	Yes
WMPB	29	BALTIMORE	MD	DIE	TUA-04-12/48H-1-R	Yes
WNJT	43	TRENTON	NJ	DIE	TUA-04-12/48H-1-R	Yes
WKRN-TV	27	NASHVILLE	TN	DIE	TUA-04-15/60H-1-T	Yes
KFQX	15	GRAND JUNCTION	CO	DIE	TUA-C-3/6L-1-N	Yes
WWAT-CD	45	CHARLEROI	PA	DIE	TUA-C2	Yes
WAZF-CD	20	FRONT ROYAL	VA	DIE	TUA-C2	Yes
WWJX	23	JACKSON	MS	DIE	TUA-C2-3/6H-1SP	Yes
WITD-CD	23	CHESAPEAKE	VA	DIE	TUA-C2SP-12/24M-1-N	Yes
WLPD-CD	35	PLANO	IL	DIE	TUA-C3-4/12L	Yes
WCMZ-TV	28	FLINT	MI	DIE	TUA-C4-12/48H-1	Yes
WYDC	48	CORNING	NY	DIE	TUA-C4SP-8 28M-1-T	Yes
KEXT-CD	20	SAN JOSE	CA	DIE	TUA-M-C3	Yes
WLPH-CD	44	MIAMI	FL	DIE	TUA-M-C3 SPECIAL	Yes
WIPB	23	MUNCIE	IN	DIE	TUA-O4-12/48H-1-T	Yes
WNIT	35	SOUTH BEND	IN	DIE	TUA-O4-14/56H-1-T	Yes
WAOE	39	PEORIA	IL	DIE	TUA-O4-16/64H-1-T-R	Yes
WEEK-TV	25	PEORIA	IL	DIE	TUA-O4-16/64H-1-T-R	Yes
KAVU-TV	15	VICTORIA	TX	DIE	TUA-O4SP-14/55H-1-T-R	Yes
KGMV	24	WAILUKU	HI	DIE	TUA-P2SP-6/12H-1-S	Yes
KOGG	16	WAILUKU	HI	DIE	TUA-P2SP-6/12H-1-T	Yes
WXEL-TV	27	WEST PALM BEACH	FL	DIE	TUA-P4-12/48H-1-S	Yes
WHDT	42	STUART	FL	DIE	TUA-SP4-12/48H-1-S-R	Yes
WTIU	14	BLOOMINGTON	IN	DIE	TUA-SP4-8/32H-1-TR	Yes
WXIN	45	INDIANAPOLIS	IN	DIE	TUM20-O4-12/48H-1-R-T	Yes
WTTK	29	KOKOMO	IN	DIE	TUM20-O4-12/48H-1-R-T	Yes
WETA-TV	27	WASHINGTON	DC	DIE	TUP-04-12-2	Yes
WPXW-TV	34	MANASSAS	VA	DIE	TUP-04-12-2	Yes
KYVE	21	YAKIMA	WA	DIE	TUP-04-8-1	Yes
WUSF-TV	34	TAMPA	FL	DIE	TUP-05-12-1	Yes
WCPB	28	SALISBURY	MD	DIE	TUP-16-04-1	Yes
WGWG	34	CHARLESTON	SC	DIE	TUP-C3-10-1	Yes

WDPX-TV	40	VINEYARD HAVEN	MA	DIE	TUP-C4-6-1	Yes
WCAX-TV	22	BURLINGTON	VT	DIE	TUP-O4/C4SP-10/40H-2-R	Yes
KTMW	20	SALT LAKE CITY	UT	DIE	TUP-SP2-12-1 & SP1-4-1	Yes
KTCI-TV	23	ST. PAUL	MN	DIE	TUP-SP4-12S-1	Yes
KTCN-TV	34	ST. PAUL	MN	DIE	TUP-SP4-12S-1	Yes
WPXR-TV	36	ROANOKE	VA	DIE	TUP-SP4-8S-1	Yes
KVCR-DT	26	SAN BERNARDINO	CA	JAM	JUHD-14/4 (56)	Yes
K31FD-D	31	BOISE	ID	JAM	JUHDX6	Yes
KRDT-CD	23	REDDING	CA	KAT	4X1KBBU	Yes
KFXO-LD	39	BEND	OR	KAT	4X2 K723147	Yes
KEVU-CD	23	EUGENE	OR	KAT	4X3 K723147	Yes
KSJF-CD	50	POTEAU	OK	KAT	723147 X 1 X 2	Yes
WBOA-CD	29	PITTSBURGH	PA	KAT	750 10068	Yes
WBYD-CD	39	PITTSBURGH	PA	KAT	750-10068	Yes
WPTG-CD	49	PITTSBURGH	PA	KAT	750-10068	Yes
KFTS	33	KLAMATH FALLS	OR	KAT	771-304	Yes
KUEN	36	OGDEN	UT	KAT	773 928	Yes
KUCW	48	OGDEN	UT	KAT	773 928	Yes
KTVX	40	SALT LAKE CITY	UT	KAT	773 928	Yes
KUED	42	SALT LAKE CITY	UT	KAT	773 928	Yes
KJZZ-TV	46	SALT LAKE CITY	UT	KAT	773 928	Yes
K35DG-D	35	LA JOLLA	CA	KAT	K723147	Yes
KLSR-TV	31	EUGENE	OR	KAT	K723147 (4X3)	Yes
KBYU-TV	44	PROVO	UT	KAT	K773928	Yes
KUTV	34	SALT LAKE CITY	UT	KAT	K773928	Yes
KSL-TV	38	SALT LAKE CITY	UT	KAT	K773928	Yes
KNXT	50	VISALIA	CA	KAT	757-179	Yes
KHMF-CA	14	BENTONVILLE	AR	Kathrein	723147 x 2	Yes
KDKF	29	KLAMATH FALLS	OR	KSD	771-304	Yes
KPXO-TV	41	KANEOHE	HI	MCI	955118	Yes
KXTQ-CD	46	LUBBOCK	TX	MCI	955118	Yes
KJTV-CD	33	WOLFFORTH	TX	MCI	955118	Yes
WTSD-CD	23	PHILADELPHIA	PA	MCI	955312	Yes
KNBX-CD	14	LAS VEGAS	NV	MCI	955314	Yes
KUVM-CD	34	MISSOURI CITY	TX	MCI	955316	Yes
KATA-CD	50	MESQUITE	TX	MCI	955318	Yes
KSKT-CD	36	SAN MARCOS	CA	MCI	955512	Yes
K08MM-D	15	BAKERSFIELD	CA	MCI	955518	Yes
WIMP-CD	25	MIAMI	FL	MCI	955518	Yes
K27LF-D	27	SAN ANTONIO	TX	MCI	955518	Yes
KTAB-TV	24	ABILENE	TX	MCI	9551316	Yes
KRBC-TV	29	ABILENE	TX	MCI	9551316	Yes
KOZL-TV	28	SPRINGFIELD	MO	MCI	9551516	Yes
WROC-TV	45	ROCHESTER	NY	MCI	9552510	Yes
KCIT	15	AMARILLO	TX	MCI	95511016	Yes
KAMR-TV	19	AMARILLO	TX	MCI	95511016	Yes
KHTV-CD	27	LOS ANGELES	CA	MCI	20064 ARRAY	Yes
WNMN	40	SARANAC LAKE	NY	MCI	955000-LP 1X2 ARRAY	Yes
KAAH-TV	27	HONOLULU	HI	MIC	955518	Yes
WQXT-CD	28	ST. AUGUSTINE	FL	PSI	PSIUP31-31 CUSTOM	Yes

KSEX-CD	42	SAN DIEGO	CA	PSI	PSIUP6-43	Yes
KPXB-TV	32	CONROE	TX	RFS	PHP-80	Yes
KETH-TV	24	HOUSTON	TX	RFS	PHP-80	Yes
WJYS	36	HAMMOND	IN	RFS	PHP24C	Yes
WVPY	21	FRONT ROYAL	VA	RFS	PHP24C	Yes
KITV	40	HONOLULU	HI	RFS	PHP6U313	Yes
KSFV-CD	22	LOS ANGELES	CA	SBP	UPC-4	Yes
WIAV-CD	44	WASHINGTON	DC	SBP	UPC-4	Yes
WAPW-CD	21	ABINGDON, ETC.	VA	SBP	UPSL-2	Yes
KKFX-CD	24	SAN LUIS OBISPO	CA	SCA	4X3KBBU	Yes
WVPY	21	FRONT ROYAL	VA	SCA	CL-1469	Yes
WVPY	21	FRONT ROYAL	VA	SCA	CL-1469	Yes
WVPY	21	FRONT ROYAL	VA	SCA	CL-1469	Yes
KCLP-CD	18	BOISE	ID	SCA	K723147	Yes
KDMD	33	ANCHORAGE	AK	SCA	K723147 ARRAY	Yes
WDSC-TV	33	NEW SMYRNA BEACH	FL	TCI	888-32	Yes
WNED-TV	43	BUFFALO	NY	DIE	TUC-05-16/80H-R	Maybe
KTVD	19	DENVER	CO	DIE	TUC-C4SP-12/48U-4-T	Maybe
WVAH-TV	19	CHARLESTON	WV	DIE	TUC-05-10/50H-1-B	Maybe
WCHS-TV	41	CHARLESTON	WV	DIE	TUC-05-10/50H-1-B	Maybe
KWBQ	29	SANTA FE	NM	DIE	TUC-05-8/40U-B	Maybe
WMHT	34	SCHENECTADY	NY	DIE	TUD-05-12/60H-1-B	Maybe
WBAY-TV	23	GREEN BAY	WI	DIE	TUD-05-14/70H-B	Maybe
WPCH-TV	20	ATLANTA	GA	DIE	TUD-05-14/70U-2-B	Maybe
WHSG-TV	44	MONROE	GA	DIE	TUD-05-14/70U-2-B	Maybe
WATE-TV	26	KNOXVILLE	TN	DIE	TUD-05-16/80H-2-B	Maybe
KASY-TV	45	ALBUQUERQUE	NM	DIE	TUD-05-8/40H-T	Maybe
KPXC-TV	43	DENVER	CO	DIE	TUD-C5-14/70H-2-B	Maybe
KPJR-TV	38	GREELEY	CO	DIE	TUD-C5-14/70H-2-B	Maybe
WNUV	40	BALTIMORE	MD	DIE	TUD-C5SP-10/36SPH-1-B	Maybe
WBFF	46	BALTIMORE	MD	DIE	TUD-C5SP-10/36SPH-1-B	Maybe
WPXL-TV	50	NEW ORLEANS	LA	DIE	TUD-C5SP-10/50U-2-B	Maybe
WFRV-TV	39	GREEN BAY	WI	DIE	TUD-C5SP-14/70H-1	Maybe
WHLV-TV	51	COCOA	FL	DIE	TUD-C5SP-16/56H-2-B	Maybe
WACX	40	LEESBURG	FL	DIE	TUD-C5SPB	Maybe
WPXK-TV	23	JELICO	TN	DIE	TUD-05-16/80-H-2-B	Maybe
WRLH-TV	26	RICHMOND	VA	DIE	TUD-05-17/70H-1-B	Maybe
WCIV	36	CHARLESTON	SC	DIE	TUD-P5SP-16/48-1-B	Maybe
WTAT-TV	24	CHARLESTON	SC	DIE	TUD-P5SP-16/48-1-B	Maybe
WCBD-TV	50	CHARLESTON	SC	DIE	TUD-P5SP-16/48-1-B	Maybe
WZDX	41	HUNTSVILLE	AL	DIE	TUD-S5B-14/70H-1-T	Maybe
WAAY-TV	32	HUNTSVILLE	AL	DIE	TUD-S5B-14/70H-1-T	Maybe
WQCW	17	PORTSMOUTH	OH	DIE	TUE-05-12/60H-B	Maybe
WLNS-TV	36	LANSING	MI	DIE	TUE-05SP-12/60H-1-M-B	Maybe
KMAX-TV	21	SACRAMENTO	CA	DIE	TUG-05-16/80H-2-B	Maybe
WOSC-CD	26	PITTSBURGH	PA	ANT	ACS4E	No
KOZJ	25	JOPLIN	MO	BOG	B16UOM	No
WITN-TV	32	WASHINGTON	NC	DIE	TFU-30GTH-R 06	No
WRJA-TV	28	SUMTER	SC	DIE	TFU-35ETT-H 04 DC	No
WTCN-CA	43	PALM BEACH	FL	DIE	TLP-12A/VP-R BB	No

WWHB-CA	48	STUART	FL	DIE	TLP-12A/VP-R BB	No
WQEC	34	QUINCY	IL	DIE	TLP-24A C	No
WJWJ-TV	44	BEAUFORT	SC	DIE	TLP-32E	No
WCMV	17	CADILLAC	MI	DIE	TUF P4 12/48	No
WCML	24	ALPENA	MI	DIE	TUF P4-12/48-1-T	No
WNPI-DT	23	NORWOOD	NY	DIE	TUF-04-10/40H-1-T	No
WHIZ-TV	40	ZANESVILLE	OH	DIE	TUF-04-10/40H-1T	No
WOUB-TV	27	ATHENS	OH	DIE	TUF-04-10/40H-SP-1-T	No
WBGU-TV	27	BOWLING GREEN	OH	DIE	TUF-04-14/56 H-1-TR	No
KLJB	49	DAVENPORT	IA	DIE	TUF-04-14/56H-1-T	No
KOZK	23	SPRINGFIELD	MO	DIE	TUF-04-16/64H-1	No
WLAJ	25	LANSING	MI	DIE	TUF-C4-10/40H-1-T	No
WCMU-TV	26	MOUNT PLEASANT	MI	DIE	TUF-C4-12/48H-1-T	No
KLCS	41	LOS ANGELES	CA	DIE	TUF-C4SP-10/40U-1-T	No
WEBA-TV	33	ALLENDALE	SC	DIE	TUF-C4SP-12/48-1-T	No
WNSC-TV	15	ROCK HILL	SC	DIE	TUF-C4SP-12/48H-1-T	No
WFPT	28	FREDERICK	MD	DIE	TUF-C4SP-6/16U-1-T	No
WOUC-TV	35	CAMBRIDGE	OH	DIE	TUF-C4SP-7/28HSP-1-T	No
WRLK-TV	32	COLUMBIA	SC	DIE	TUF-O4-12/48H-1-T	No
KAPP	14	YAKIMA	WA	DIE	TUF-O4-12/48H-1-T	No
KWQC-TV	36	DAVENPORT	IA	DIE	TUF-O4-14/56H-1-T	No
WIFR	41	FREEMPORT	IL	DIE	TUF-O4-14/56H-1-T	No
KPXG-TV	22	SALEM	OR	DIE	TUF-O4-14/56H-1-T	No
WJPM-TV	45	FLORENCE	SC	DIE	TUF-O4-14/56H-1-T	No
WNEH	18	GREENWOOD	SC	DIE	TUF-O4-14/56H-1-T	No
WRET-TV	43	SPARTANBURG	SC	DIE	TUF-O4-14/56H-1-T	No
WPBN-TV	47	TRAVERSE CITY	MI	DIE	TUF-P4-12/48H-1	No
WGTU	29	TRAVERSE CITY	MI	DIE	TUF-P4-12/48H-1	No
WGCE-CD	25	ROCHESTER	NY	ERI	AL8	No
KCSG	14	CEDAR CITY	UT	ERI	CARINA ALP-W	No
KTBN-TV	33	SANTA ANA	CA	ERI	ESR-8U4-HP2CX-33	No
WMKE-CD	21	MILWAUKEE	WI	PSI	PSILP8EC	No
KTXD-TV	46	GREENVILLE	TX	RFS	PHP-36C	No
WCPX-TV	43	CHICAGO	IL	RFS	PHP24C	No
KDOC-TV	32	ANAHEIM	CA	RFS	PHP30C	No
KOCE-TV	48	HUNTINGTON BEACH	CA	RFS	PHP30CB	No
KDTX-TV	45	DALLAS	TX	RFS	PHP36C	No
KHOG-TV	15	FAYETTEVILLE	AR	RFS	PHP40D	No
KATU	43	PORTLAND	OR	RFS	PHP80E	No
KFTH-DT	36	ALVIN	TX	RFS	PHP80U22211E	No
KLDF-CD	17	LOMPOC	CA	SCA	4DR-16-2HW	No
K17JI-D	17	FRESNO	CA	SCA	4DR-16S	No
KCRP-CD	41	CORPUS CHRISTI	TX	SCA	SL-8	No
WWNY-CD	18	MASSENA	NY	ADC	SC-24	Unknown
WBZ-TV	30	BOSTON	MA	HAR	TAD-24UDA 5/60-MR	Unknown
WSBK-TV	39	BOSTON	MA	HAR	TAD-24UDA-5/60	Unknown
KBXS-CD	14	SHREVEPORT	LA	JAM	OM-16	Unknown
WHDN-CD	26	NAPLES	FL	MIG	3-DIE-WYDT-CUSTOM	Unknown
KKPM-CD	28	CHICO	CA	SUP	CUSTOM PANEL ARRAY	Unknown

Reformatted “Appendix G” to February 17, 2016
On Time, On Budget Study

Appendix G – TIA Structural Standard of
Broadcast Station Towers

Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	K04QP-D	1			1
	K09YZ-D	1			1
	K10OG-D	1			1
	K17GD-D	1			1
	K17JI-D	1			1
	K21DO-D	1			1
	K21JQ-D	1			1
	K22FC-D	1			1
	K23EX-D	1			1
	K27DX-D	1			1
	K32DY-D		1		1
	K33EJ-D	1			1
	K35DG-D			1	1
	K36DB-CD	1			1
	K47GI-D	1			1
	K49ND-D	1			1
	K50LZ-D			1	1
	KABE-CD	1			1
	KABH-CD			1	1
	KAID	2			2
	KAIL-TV			1	1
	KAIL	1			1
	KATN			1	1

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Note 3 - Construction Permits are omitted.

Note 4 - Since each broadcaster seperately reported on their structural revision on their schedule 381, the totals in this sheet is larger than the total number of structures. To properly represent the data, a percentage of the total is used to show the broadcaster industry as a whole.

Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	KAXT-CD	1			1
	KAZQ			1	1
	KAZT-TV	1			1
	KBAK-TV			1	1
	KBBV-CD			1	1
	KBDI-TV		1		1
	KBLN-TV	1			1
	KBSV	1			1
	KBTF-CD	1			1
	KBXS-CD			1	1
	KCBY-TV			1	1
	KCDT	1			1
	KCPM			1	1
	KCSD-TV			1	1
	KCSG			1	1
	KCVB-CD	1			1
	KDAO-CD		1		1
	KDFS-CD	1			1
	KDKF		1		1
	KDRV	1			1
	KDTV-CD	1			1
	KEJT-CD			1	1
	KEMO-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	KENV-DT		1		1
	KERO-TV			1	1
	KETD			1	1
	KEVC-CD		1		1
	KEXT-CD	1			1
	KFAZ-CA		1		1
	KFNE	1			1
	KFQX	1			1
	KFTS		1		1
	KFTU-DT		1		1
	KFXO-LD		1		1
	KGBY			1	1
	KGJT-CD	1			1
	KGMC		1		1
	KGMV			1	1
	KGWL-TV	1			1
	KGWR-TV	1			1
	KHPL-CD	1			1
	KIIT-CD		1		1
	KISU-TV	1	1		1
	KIXE-TV	1			1
	KJNP-TV	1			1
	KKAI	3			3

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	KKFX-CD	1			1
	KKJB		1		1
	KLCS		1		1
	KLDF-CD	1			1
	KLFI-LP			1	1
	KLUZ-TV		1		1
	KLVX			1	1
	KMAU			1	1
	KMCB	1			1
	KMEB			1	1
	KMIR-TV		1		1
	KMMA-CD		1		1
	KMMD-CD		1		1
	KMOH-TV			1	1
	KMVU-DT			1	1
	KNAT-TV		1		1
	KNIC-CD	1			1
	KNMD-TV		1		1
	KNPB		1		1
	KNSD			1	1
	KNXT			1	1
	KOAA-TV			1	1
	KOGG			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	KOHC-CD		1		1
	KOLO-TV		1		1
	KORX-CD	1			1
	KPAZ-TV	1			1
	KPDF-CA		1		1
	KPMR	1			1
	KPOM-CD			1	1
	KPSP-CD		1		1
	KPTW		1		1
	KPXN-TV		1		1
	KPXO-TV	1			1
	KQMM-CD		1		1
	KQSL		1		1
	KQUP			1	1
	KRCR-TV		1		1
	KRDO-TV			1	1
	KRDT-CD		1		1
	KREN-TV	1			1
	KRET-CD	1			1
	KREZ-TV			1	1
	KRHP-CD	1			1
	KRMJ		1		1
	KRMT		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	KRMU	1			1
	KRNS-CD	1			1
	KRNV-DT		1		1
	KRQE	1			1
	KRTN-TV	1			1
	KSBB-CD	1			1
	KSBO-CD			1	1
	KSBS-CD	1			1
	KSEX-CD			1	1
	KSGW-TV	1			1
	KSJF-CD			1	1
	KSTU		1		1
	KSYS	1			1
	KTAS		1		1
	KTBN-TV		1		1
	KTCW	1			1
	KTEL-CD			1	1
	KTLN-TV	1			1
	KTNL-TV	1			1
	KTNW		1		1
	KTOO-TV	1			1
	KTVC			1	1
	KTVF		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	KTVH-DT		1		1
	KTVN		1		1
	KTVR		1		1
	KTVZ		1		1
	KTZT-CD	1			1
	KUAM-TV		1		1
	KUAS-TV		1		1
	KUBD	1			1
	KUES	1			1
	KUHM-TV		1		1
	KUNP			1	1
	KUPU	3			3
	KUSI-TV	1			1
	KUVI-DT	1			1
	KVBI-CD			1	1
	KVER-CA		1		1
	KVMD			1	1
	KVME-TV		1		1
	KVMM-CD	1			1
	KVVU-TV		1		1
	KWBA-TV		1		1
	KWBN	1			1
	KWBQ	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	KWHM			1	1
	KWYP-DT		1		1
	KXRM-TV		1		1
	KXTF	1			1
	KYNM-CD			1	1
	KYUS-TV		1		1
	W08EM-D			1	1
	W10BG-D		1		1
	W16AX-D	1			1
	W18BL-D	1			1
	W24BB-D	1			1
	W30CV-D		1		1
	W33BY-D			1	1
	W47AO-D	1			1
	WAGM-TV			1	1
	WAHU-CD		1		1
	WAPG-CD	1			1
	WATC-DT			1	1
	WAZH-CD			1	1
	WAZT-CD		1		1
	WAZW-CD			1	1
	WBFT-CA			1	1
	WBXF-CD	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	WBXI-CD	1			1
	WCAV		1		1
	WCAX-TV		1		1
	WCTX-CD	1			1
	WDGA-CD	1			1
	WDNN-CD	1			1
	WDVB-CD		1		1
	WDWL	1			1
	WECN	1			1
	WEDY		1		1
	WELU	1			1
	WETK			1	1
	WFFF-TV			1	1
	WFFP-TV			1	1
	WFNY-CD	1			1
	WFXQ-CD	1			1
	WFXR			1	1
	WGBY-TV	1			1
	WGCE-CD	1			1
	WGGS-TV			1	1
	WHDN-CD	1			1
	WHKY-TV			1	1
	WIRS		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null					
	WJAL			1	1
	WJKF-CD	1			1
	WJPW-CD	1			1
	WKBS-TV	1			1
	WKIN-CD	1			1
	WKME-CD	1			1
	WKPV	1			1
	WLBZ	1			1
	WLCU-CD	1			1
	WLFG	1			1
	WLNN-CD			1	1
	WMED-TV		1		1
	WMEM-TV		1		1
	WMKG-CD	1			1
	WMNO-CD	1			1
	WMNT-CD	1			1
	WMTJ			1	1
	WNCE-CD		1		1
	WNEU	1			1
	WNMN		1		1
	WOIL-CD	1			1
	WOST	1			1
	WPCT	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	WPDP-LP		2		2
	WPFN-CD	1			1
	WPTZ		1		1
	WQHA			1	1
	WQMY		1		1
	WQQZ-CD	1			1
	WQSJ-CD	1			1
	WQTO	1			1
	WRLW-CD	1			1
	WSJN-CD	1			1
	WSJU-TV	1			1
	WSTE-DT		1	1	1
	WSVF-CD		1		1
	WTBL-CD	1			1
	WTBY-TV		1		1
	WTCV	1			1
	WTIN-TV		1		1
	WTKO-CD	1			1
	WTOO-CD	1			1
	WUJA		1		1
	WUNF-TV	1			1
	WVII-TV	1			1
	WVNY			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
Null	WVOZ-TV	1			1
	WVPT			3	3
	WVPY		2	1	2 1
	WVTB			1	1
	WVH-CD		1		1
	WYKE-CD		1		1
	WZVI	1			1
	Total	125	80	67	80 67 125
1000007	WLAE-TV	1			1
	Total	1			1
1000032	WLUC-TV		1		1
	Total		1		1
1000069	WJBK			1	1
	Total			1	1
1000138	KRTV		1		1
	KUGF		1		1
	Total		2		2
1000389	KQTV		1		1
	Total		1		1
1000401	KUFM-TV	1			1
	Total	1			1
1000438	WFUP		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1000493	WBGT-CD		1		1
	Total		1		1
1000681	KBZK		1		1
	KDBZ-CD		1		1
	KUSM-TV		1		1
	Total		3		3
1000688	WWMT	1			1
	Total	1			1
1000778	KTVM-TV		1		1
	Total		1		1
1000779	KECI-TV		1		1
	Total		1		1
1000780	KAJJ-CD	1			1
	KCFW-TV		1		1
	KUKL-TV		1		1
	Total	1	2		2
1000794	KSVI			1	1
	Total			1	1
1000830	WDIV-TV		1		1
	Total		1		1
1001059	KXLF-TV		1		1
	Total		1		1
1001082	KFXA	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1001082	Total	1			1
1001101	KLWY			1	1
	Total			1	1
1001134	KAET			1	1
	Total			1	1
1001160	KSDK		1		1
	Total		1		1
1001289	KBCW			1	1
	KCNS			1	1
	KCSM-TV			1	1
	KEMO-TV			1	1
	KFSF-DT			1	1
	KGO-TV			1	1
	KMTP-TV			1	1
	KOFY-TV			1	1
	KPIX-TV			1	1
	KQED			1	1
	KRON-TV			1	1
	KTVU			1	1
	Total			12	12
1001294	WCNC-TV			1	1
	Total			1	1
1001496	KSAZ-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1001496	Total		1		1
1001555	WQLN			1	1
	Total			1	1
1001558	WFMY-TV	1			1
	Total	1			1
1001716	WCVI-TV	1			1
	Total	1			1
1001756	WKBW-TV		1		1
	Total		1		1
1002069	KASW	1			1
	Total	1			1
1002070	KTVK		1		1
	Total		1		1
1002073	KPNX		1		1
	Total		1		1
1002079	WTLJ			1	1
	Total			1	1
1002081	WAQP			1	1
	Total			1	1
1002110	KYMA-DT	1			1
	Total	1			1
1002140	WHNS		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1002191	KSKC-CD		1		1
	Total		1		1
1002348	KUTP		1		1
	Total		1		1
1002362	WFTX-TV			1	1
	Total			1	1
1002376	KDTP	1			1
	Total	1			1
1002407	KFTU-CD			1	1
	KUVE-DT			1	1
	Total			2	2
1002422	WFQX-TV	1			1
	WWTV	1			1
	Total	2			2
1002423	WWUP-TV	1			1
	Total	1			1
1002464	WXYZ-TV		1		1
	Total		1		1
1002469	WKTV			1	1
	Total			1	1
1002510	WJRT-TV	1			1
	Total	1			1
1002514	WBUP		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1002514	Total		1		1
1002544	KSNF	1			1
	Total	1			1
1002752	KSWT	1			1
	Total	1			1
1002771	K13XD-D		1		1
	KFXF		1		1
	Total		2		2
1002781	WRPX-TV			1	1
	Total			1	1
1002840	KTEL-TV	1			1
	Total	1			1
1002861	KXGN-TV		1		1
	Total		1		1
1002871	WNYA		1		1
	Total		1		1
1002872	WBKB-TV			1	1
	Total			1	1
1003017	KFVS-TV			1	1
	Total			1	1
1003118	KMIZ		1		1
	Total		1		1
1003305	KSMN		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1003305	Total		1		1
1003308	WCFE-TV			1	1
	Total			1	1
1003343	KZBZ-CD	1			1
	Total	1			1
1003344	KVIH-TV		1		1
	Total		1		1
1003429	WMYD			1	1
	WTVS			1	1
	WWJ-TV		1		1
	Total		1	2	1 2
1003433	WBZ-TV			1	1
	WCVB-TV			1	1
	WGBH-TV			1	1
	WGBX-TV			1	1
	WSBK-TV			1	1
	WYDN			1	1
	Total			6	6
1003484	KRBK			1	1
	Total			1	1
1003525	KDNL-TV	1			1
	Total	1			1
1003634	WRBU			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1003634	Total			1	1
1003682	WTVH		1		1
	Total		1		1
1003764	WFXV		1		1
	WUTR		1		1
	Total		2		2
1003841	KFPH-DT		1		1
	KTVW-CD		1		1
	Total		2		2
1003864	WHEC-TV		1		1
	WROC-TV		1		1
	Total		2		2
1003920	KETC			1	1
	Total			1	1
1003958	WXXI-TV			1	1
	Total			1	1
1004021	KTBY	1			1
	Total	1			1
1004101	WSYR-TV		1		1
	Total		1		1
1004169	WNPI-DT		1		1
	WWNY-CD		1		1
	Total		2		2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1004233	WFXT			1	1
	WLVI			1	1
	Total			2	2
1004407	KMOV			1	1
	Total			1	1
1004411	KBFD-DT			1	1
	Total			1	1
1004419	WHIG-CD		1		1
	Total		1		1
1004438	WRAY-TV		1		1
	Total		1		1
1004484	WWLP		1		1
	Total		1		1
1004499	WDAF-TV		1		1
	Total		1		1
1004541	KRBK			1	1
	Total			1	1
1004605	KPAX-TV		1		1
	Total		1		1
1004617	KOBR	1			1
	Total	1			1
1004623	WBPX-TV			1	1
	WFXZ-CD			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1004623	WMFP			1	1
	Total			3	3
1004685	KUVE-CD	1			1
	Total	1			1
1004741	WLLA	1			1
	Total	1			1
1004745	WAXN-TV			1	1
	WSOC-TV			1	1
	Total			2	2
1004791	KRBK			1	1
	Total			1	1
1005016	KTVA		1		1
	Total		1		1
1005062	WBTV			1	1
	Total			1	1
1005065	WHKY-TV		1		1
	WTVI		1		1
	Total		2		2
1005123	WJAR			2	2
	WLNE-TV			1	1
	WRIW-CD			1	1
	WSBE-TV			1	1
	Total			5	5

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1005272	KULR-TV			1	1
	Total			1	1
1005275	WDES-CD			1	1
	Total			1	1
1005390	KBSI		1		1
	Total		1		1
1005400	WOTV		1		1
	Total		1		1
1005424	WWTI		1		1
	Total		1		1
1005429	WSYM-TV		1		1
	Total		1		1
1005664	KAZT-CD		1		1
	KPHO-TV		1		1
	Total		2		2
1005702	WXMI		1		1
	Total		1		1
1005721	WGVU-TV			1	1
	Total			1	1
1005766	KHON-TV			1	1
	Total			1	1
1005811	KCTV	1			1
	Total	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1005862	WHDH		1		1
	Total		1		1
1005886	WIXT-CD			1	1
	Total			1	1
1006048	KRWB-TV			1	1
	Total			1	1
1006348	WNYS-TV		1		1
	WSYT		1		1
	Total		2		2
1006359	WITN-TV	1			1
	WNCT-TV	1			1
	Total	2			2
1006361	KCHF		1		1
	Total		1		1
1006461	WYBE-CD	1			1
	Total	1			1
1006593	WNYI		1		1
	Total		1		1
1006689	WIVB-TV		1		1
	Total		1		1
1006698	WNEM-TV		1		1
	Total		1		1
1006703	WARZ-CD			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1006703	WRDC			1	1
	Total			2	2
1006704	WUVC-DT			1	1
	Total			1	1
1006705	WGTB-CD			1	1
	WJZY			1	1
	WMYT-TV			1	1
	Total			3	3
1006711	KCWE		1		1
	KMBC-TV		1		1
	Total		2		2
1006717	WLNY-TV			1	1
	Total			1	1
1006719	WGTQ	1			1
	Total	1			1
1006720	WCMV			1	1
	WGTU	1			1
	WPBN-TV	1			1
	Total	2		1	1 2
1006735	KNLJ		1		1
	Total		1		1
1007037	WJMN-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1007047	KBNS-CD		1		1
	Total		1		1
1007048	WCBS-TV		1		1
	WEHR-CD		1		1
	WFUT-DT			1	1
	WMBC-TV		1		1
	WNBC		1		1
	WNET		1		1
	WNJU		1		1
	WNYW		1		1
	WPIX			1	1
	WPXN-TV		1		1
	WWOR-TV		1		1
	WXTV-DT			1	1
	Total		9	3	9 3
1007060	WBGH-CD		1		1
	WIVT		1		1
	Total		2		2
1007106	WXSP-CD		1		1
	Total		1		1
1007114	KFVE			1	1
	KGMB			1	1
	KHET			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1007114	KHNL			1	1
	Total			4	4
1007157	KEFN-CD			1	1
	Total			1	1
1007163	WPXU-TV		1		1
	Total		1		1
1007164	KOBF		1		1
	Total		1		1
1007178	KMSB		1		1
	KOLD-TV		1		1
	KTTU		1		1
	KVOA		1		1
	Total		4		4
1007205	WLIW		1		1
	Total		1		1
1007317	KWHE	1			1
	Total	1			1
1007392	KTVO	1			1
	Total	1			1
1007418	KAKM			1	1
	KTUU-TV			1	1
	KYUR			1	1
	Total			3	3

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1007637	KOMU-TV		1		1
	Total		1		1
1007645	WLPC-CD	1			1
	Total	1			1
1007647	KNAZ-TV		1		1
	Total		1		1
1007666	WFTY-DT			1	1
	Total			1	1
1007719	KCAL-TV			1	1
	KCBS-TV			1	1
	Total			2	2
1007727	KUAC-TV			1	1
	Total			1	1
1007736	KOZK		1		1
	Total		1		1
1007737	WHSU-CD		1		1
	WONO-CD		1		1
	WTVU-CD		1		1
	Total		3		3
1007783	KPOB-TV		1		1
	Total		1		1
1007810	WILX-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1007829	WBKP		1		1
	Total		1		1
1007836	WBRC			1	1
	Total			1	1
1007955	WCCU	1			1
	Total	1			1
1007971	WUBX-CD			1	1
	Total			1	1
1007996	WDWO-CD			1	1
	WKBD-TV		1		1
	WPXD-TV		1		1
	Total		2	1	2 1
1008241	WXII-TV			1	1
	Total			1	1
1008242	WECT		1		1
	WSFX-TV		1		1
	WWAY		1		1
	Total		3		3
1008480	KYOU-TV			1	1
	Total			1	1
1008507	KTGM			1	1
	Total			1	1
1008520	WOUC-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1008520	Total			1	1
1008544	KBIM-TV			1	1
	Total			1	1
1008657	WPXS	1			1
	Total	1			1
1008775	WAOE		1		1
	WEEK-TV		1		1
	Total		2		2
1008823	WICS			1	1
	Total			1	1
1008851	WUSI-TV			1	1
	Total			1	1
1008912	KCWC-DT		1		1
	Total		1		1
1008931	KFNB		1		1
	KGWC-TV		1		1
	KTWO-TV		1		1
	Total		3		3
1008933	KGWN-TV		1		1
	Total		1		1
1008934	WRSP-TV	1			1
	Total	1			1
1009005	KHQA-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1009005	Total	1			1
1009012	WOCH-CD		1		1
	WYCC		1		1
	Total		2		2
1009013	WGBO-DT			1	1
	WOCK-CD		1		1
	Total		1	1	1 1
1009082	WHOI	1			1
	Total	1			1
1009129	WNYB			1	1
	Total			1	1
1009377	WTVP		1		1
	Total		1		1
1009564	KTPX-TV		1		1
	Total		1		1
1009570	WILL-TV		1		1
	Total		1		1
1009651	WAND		1		1
	Total		1		1
1009805	W29CI-D	1			1
	Total	1			1
1009806	WTJR		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1009813	K09YI-D	1			1
	Total	1			1
1009950	KLEI-TV	1			1
	Total	1			1
1009951	KOCO-TV			1	1
	Total			1	1
1009985	K43FO-D	1			1
	KBLR			1	1
	KEEN-CD			1	1
	KHDF-CD			1	1
	Total	1		3	3
1010023	KUOK-CD		1		1
	Total		1		1
1010136	WUVN		1		1
	Total		1		1
1010146	WYZZ-TV	1			1
	Total	1			1
1010214	W23BW-D	1			1
	Total	1			1
1010346	KABC-TV	1			1
	Total	1			1
1010348	WTVD		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1010439	WETM-TV		1		1
	Total		1		1
1010544	WEYI-TV		1		1
	Total		1		1
1010556	WKAQ-TV		1		1
	Total		1		1
1010566	KTSF			1	1
	Total			1	1
1010567	KNTV		1		1
	Total		1		1
1010654	KOMI-CD			1	1
	KUOK	1			1
	Total	1		1	1 1
1010730	WAPA-TV		1		1
	WIPR-TV		1		1
	Total		2		2
1010775	WORA-TV		1		1
	Total		1		1
1010825	KLAS-TV		1		1
	Total		1		1
1010985	KTUL	1			1
	Total	1			1
1011019	WMEI	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1011019	Total	1			1
1011020	WLII-DT			1	1
	Total			1	1
1011023	WSTE-DT			1	1
	Total			1	1
1011024	WSTE-DT			1	1
	Total			1	1
1011025	WSTE-DT	1			1
	Total	1			1
1011271	WCTI-TV	1			1
	WUNM-TV	1			1
	WYDO	1			1
	Total	3			3
1011273	KXII		1		1
	Total		1		1
1011337	KOCB	1			1
	KOKH-TV	1			1
	Total	2			2
1011350	KHOU		1		1
	Total		1		1
1011355	KJRH-TV			1	1
	KOED-TV		1		1
	KOTV-DT			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1011355	KWHB			1	1
	Total		1	3	1 3
1011390	WGEM-TV		1		1
	Total		1		1
1011404	KOVR			1	1
	KTFK-DT			1	1
	KXTV			1	1
	Total			3	3
1011407	KDFW		1		1
	WFAA	1			1
	Total	1	1		1 1
1011408	KIRO-TV			1	1
	Total			1	1
1011414	KTTC			1	1
	Total			1	1
1011421	WSJV		1		1
	Total		1		1
1011422	WREX		1		1
	Total		1		1
1011425	KTEN			1	1
	Total			1	1
1011426	KAME-TV	1			1
	Total	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1011437	KTNV-TV		1		1
	Total		1		1
1011469	WORO-DT		1		1
	WRUA		1		1
	Total		2		2
1011495	WNJX-TV		1		1
	WOLE-DT		1		1
	Total		2		2
1011510	KUOT-CD		1		1
	Total		1		1
1011580	WORA-TV		1		1
	Total		1		1
1011757	WHAM-TV		1		1
	Total		1		1
1011760	WPTD			1	1
	Total			1	1
1011933	WSYX	1			1
	WTTE			1	1
	Total	1		1	1 1
1012028	W16DO-D			1	1
	WBNX-TV			1	1
	Total			2	2
1012051	KVUI		1		1

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1012051	Total		1		1
1012088	WPTO		1		1
	WXIX-TV		1		1
	Total		2		2
1012089	WOIO			1	1
	Total			1	1
1012090	WUAB			1	1
	Total			1	1
1012091	WNWO-TV		1		1
	Total		1		1
1012094	WKOI-TV		1		1
	Total		1		1
1012106	WVEO	1			1
	Total	1			1
1012244	KCET			1	1
	Total			1	1
1012278	KTXL			1	1
	KVIE			1	1
	Total			2	2
1012372	KMPH-TV		1		1
	Total		1		1
1012375	WGVK			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1012423	WUPW			1	1
	Total			1	1
1012536	WLCN-CD			1	1
	Total			1	1
1012584	KKAP		1		1
	KKYK-CD		1		1
	KLRA-CD		1		1
	Total		3		3
1012836	KNET-CD			1	1
	KNLA-CD			1	1
	KSFV-CD			1	1
	Total			3	3
1012894	WTLW		1		1
	Total		1		1
1012933	KODE-TV	1			1
	KOZJ			1	1
	Total	1		1	1 1
1012934	KRCG		1		1
	Total		1		1
1012992	WQHS-DT			1	1
	Total			1	1
1013158	KCBA		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1013180	KXLK-CD		1		1
	Total		1		1
1013220	WGRZ		1		1
	Total		1		1
1013230	WMFD-TV		1		1
	WOHZ-CD		1		1
	Total		2		2
1013331	WDKA		1		1
	Total		1		1
1013337	KGEB	1			1
	Total	1			1
1013512	WAOH-CD		1		1
	Total		1		1
1013606	KSKJ-CD		1		1
	Total		1		1
1013613	WFXB			1	1
	Total			1	1
1013618	WCPO-TV		1		1
	WOTH-CD		1		1
	Total		2		2
1013620	WSUR-DT			1	1
	Total			1	1
1013678	WKBN-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1013678	Total			1	1
1013716	WKEF		1	1	1
	Total		1	1	1
1013890	KAZA-TV		1		1
	Total		1		1
1013913	WCMZ-TV		1		1
	Total		1		1
1013919	WVIZ			1	1
	Total			1	1
1014010	KEYT-TV		1		1
	Total		1		1
1014128	K20JX-D	1			1
	Total	1			1
1014132	WSTR-TV		1		1
	Total		1		1
1014519	WLIO			1	1
	WOHL-CD			1	1
	Total			2	2
1014527	KFMB-TV			1	1
	Total			1	1
1014534	KVPT		1		1
	Total		1		1
1014573	WUNG-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1014573	Total			1	1
1014574	WUNC-TV			1	1
	Total			1	1
1014575	WUNE-TV		1		1
	Total		1		1
1014576	WUNP-TV			1	1
	Total			1	1
1014577	WUNL-TV		1		1
	Total		1		1
1014580	WUNU		1		1
	Total		1		1
1014589	WUNJ-TV			1	1
	Total			1	1
1014623	KKPM-CD		1		1
	Total		1		1
1014626	KTNC-TV		1		1
	Total		1		1
1014642	KILM			1	1
	Total			1	1
1014714	WWHO		1		1
	Total		1		1
1014861	WEWS-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1015068	WGTE-TV			1	1
	Total			1	1
1015228	KBFX-CD			1	1
	Total			1	1
1015246	WWBT		1		1
	Total		1		1
1015316	WFMJ-TV		1		1
	Total		1		1
1015652	WOCB-CD	1			1
	Total	1			1
1015681	WTOL	1			1
	Total	1			1
1015686	KCRA-TV			1	1
	KMAX-TV		1		1
	KQCA			1	1
	KSPX-TV			1	1
	Total		1	3	1 3
1015709	KGPE		1		1
	Total		1		1
1015714	KION-TV		1		1
	Total		1		1
1015930	KBNT-CD			1	1
	KGTV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1015930	Total			2	2
1015947	K08MM-D			1	1
	KGET-TV			1	1
	Total			2	2
1016047	WMBD-TV		1		1
	Total		1		1
1016048	WNYF-CD	1			1
	WWNY-TV	1			1
	Total	2			2
1016051	WCIX			1	1
	Total			1	1
1016057	WCIA			1	1
	Total			1	1
1016071	WBGU-TV		1		1
	Total		1		1
1016112	WPMC-CD			1	1
	Total			1	1
1016116	WDTN		1		1
	Total		1		1
1016353	WADL		1		1
	Total		1		1
1016460	WHIO-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1016461	WPBS-DT		1		1
	Total		1		1
1016490	WLWC		1		1
	Total		1		1
1016546	WSET-TV			1	1
	Total			1	1
1016566	WBNG-TV		1		1
	Total		1		1
1016799	KCCI	1			1
	Total	1			1
1017006	WGCT-CD	1			1
	Total	1			1
1017266	WINM			1	1
	Total			1	1
1017424	WSWG		1		1
	Total		1		1
1017598	WBRA-TV		1		1
	Total		1		1
1017602	KCRG-TV			1	1
	KGAN			1	1
	KRIN			1	1
	Total			3	3
1017604	WJXT			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1017604	WJXX			1	1
	WTLV			1	1
	Total			3	3
1017638	WNVC			1	1
	Total			1	1
1017639	WNVN			1	1
	Total			1	1
1017951	WHSV-TV		1		1
	Total		1		1
1017996	WKPT-CD		1		1
	WKPZ-CD		1		1
	Total		2		2
1018045	WAZF-CD			1	1
	Total			1	1
1018104	WAVY-TV			1	1
	WITD-CD			1	1
	WKTD-CD			1	1
	WNLO-CD			1	1
	WVBT			1	1
	Total			5	5
1018110	KMPH-CD		1		1
	Total		1		1
1018206	WVPY			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1018206	Total			1	1
1018222	WHTJ			1	1
	WVPT			1	1
	Total			2	2
1018227	WCVE-TV		1		1
	WCVW		1		1
	WRIC-TV		1		1
	WRLH-TV			1	1
	WTVR-TV		1		1
	Total		4	1	4 1
1018292	WGNT			1	1
	Total			1	1
1018308	WQEC		1		1
	Total		1		1
1018309	WMEC		1		1
	Total		1		1
1018364	KRSU-TV			1	1
	Total			1	1
1018365	KSBY		1		1
	Total		1		1
1018367	KVCR-DT		1		1
	Total		1		1
1018460	WGGB-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1018460	Total		1		1
1018464	WEAO			1	1
	Total			1	1
1018564	KCAU-TV	1			1
	Total	1			1
1018573	WTCE-TV			1	1
	WTCN-CA			1	1
	WWHB-CA			1	1
	Total			3	3
1018585	WHFT-TV		1		1
	Total		1		1
1018586	WFGC			1	1
	Total			1	1
1018626	WTOC-TV	1			1
	Total	1			1
1018630	KEFB		1		1
	Total		1		1
1018749	WEPT-CD	1			1
	Total	1			1
1018776	WGTV		1		1
	Total		1		1
1018780	WXGA-TV		1		1
	Total		1		1

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1018782	WACS-TV		1		1
	Total		1		1
1018785	WABW-TV		1		1
	Total		1		1
1018795	WJSP-TV		1		1
	Total		1		1
1018796	WCES-TV		1		1
	Total		1		1
1018797	WNGH-TV		1		1
	Total		1		1
1018798	WMUM-TV		1		1
	Total		1		1
1018908	WGTA		1		1
	Total		1		1
1018919	WKTG-CD			1	1
	Total			1	1
1018922	WDMA-CD			1	1
	Total			1	1
1019014	WKRC-TV		1		1
	Total		1		1
1019034	KITV		1		1
	Total		1		1
1019105	WXTX			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1019105	Total			1	1
1019110	WBNF-CD		1		1
	WUTV		1		1
	Total		2		2
1019242	KARK-TV		1		1
	KARZ-TV		1		1
	KTHV		1		1
	Total		3		3
1019291	KICU-TV			1	1
	KQEH			1	1
	Total			2	2
1019300	WBRZ-TV	1			1
	Total	1			1
1019301	KBTR-CD	1			1
	Total	1			1
1019370	WHFL-CD		1		1
	Total		1		1
1019440	KFRE-TV		1		1
	Total		1		1
1019441	KFSN-TV		1		1
	Total		1		1
1019627	KSLA		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1019723	WAGT		1		1
	Total		1		1
1019724	WINK-TV			1	1
	Total			1	1
1019786	WGXA			1	1
	Total			1	1
1019858	WBFL-CD		2		2
	Total		2		2
1019967	WPGA-TV			1	1
	Total			1	1
1019981	WCTV	1			1
	Total	1			1
1020086	WSKC-CD			1	1
	Total			1	1
1020313	KLPA-TV			1	1
	Total			1	1
1020314	KLTS-TV		1		1
	Total		1		1
1020316	WLPB-TV	1			1
	Total	1			1
1020429	WBXH-CD		1		1
	Total		1		1
1020431	WXIA-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1020431	Total	1			1
1020483	WGCU			1	1
	Total			1	1
1020486	KINC		1		1
	KNBX-CD	1			1
	Total	1	1		1
1020497	WAFB	1			1
	Total	1			1
1020684	KVHP		1		1
	Total		1		1
1020779	WARP-CD			1	1
	Total			1	1
1020780	WHNO			1	1
	WPXL-TV			1	1
	WUPL			1	1
	Total			3	3
1020781	WVEN-TV		1		1
	Total		1		1
1020783	WBXJ-CD			1	1
	WJEB-TV		1		1
	Total		1	1	1
1020785	KPLR-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1020854	KAJN-CD		1		1
	Total		1		1
1020862	WDSU			1	1
	WGNO			1	1
	WNOL-TV			1	1
	Total			3	3
1020877	KPXJ		1		1
	KTBS-TV		1		1
	Total		2		2
1020915	KLTL-TV		1		1
	KPLC		1		1
	Total		2		2
1020933	KALB-TV			1	1
	Total			1	1
1020975	KADO-CD			1	1
	Total			1	1
1021036	WNEO		1		1
	Total		1		1
1021056	KMUM-CD			1	1
	Total			1	1
1021057	KBTB-CD			1	1
	KEZT-CD			1	1
	Total			2	2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1021494	WOKZ-CD			1	1
	Total			1	1
1021563	KARD		1		1
	Total		1		1
1021701	KMCT-TV	1			1
	Total	1			1
1021703	WNAC-TV		1		1
	WPRI-TV		1		1
	Total		2		2
1022259	KDVR		1		1
	Total		1		1
1022260	KFCT		1		1
	Total		1		1
1022281	WTNO-LP			1	1
	Total			1	1
1022324	WBYD-CD			1	1
	WEPA-CD			1	1
	WINP-TV			1	1
	WNNB-CD			1	1
	WOSC-CD			1	1
	WPTG-CD			1	1
	WQED			1	1
	Total			7	7

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1022409	WYES-TV	1			1
	Total	1			1
1022410	WVUE-DT	1			1
	Total	1			1
1022425	WPXQ-TV			1	1
	Total			1	1
1022487	KMSS-TV		1		1
	KSHV-TV		1		1
	Total		2		2
1022617	KFOL-CD			1	1
	Total			1	1
1022669	KADN-TV		1		1
	Total		1		1
1022678	WPME		1		1
	WPXT		1		1
	Total		2		2
1022744	WNTZ-TV			1	1
	Total			1	1
1022810	KZUP-CD		1		1
	WBRL-CD		1		1
	WGMB-TV		1		1
	WVLA-TV		1		1
	Total		4		4

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1022899	KMSP-TV		1		1
	KTCA-TV		1		1
	KTCI-TV		1		1
	WFTC		1		1
	Total		4		4
1022906	KFXL-TV			1	1
	Total			1	1
1023010	WNMU			1	1
	Total			1	1
1023079	WYCW		1		1
	Total		1		1
1023300	KLKN		1		1
	Total		1		1
1023484	KRMA-TV			1	1
	KTFD-DT			1	1
	Total			2	2
1023535	KRMZ	1			1
	Total	1			1
1023882	KARE			1	1
	KSTP-TV			1	1
	WCCO-TV			1	1
	WUCW		1		1
	Total		1	3	1 3

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1023883	KSTC-TV			1	1
	Total			1	1
1024109	WALV-CD			1	1
	WTHR			1	1
	Total			2	2
1024180	KRWF			1	1
	Total			1	1
1024192	KAWE	1			1
	Total	1			1
1024193	KAWB		1		1
	Total		1		1
1024268	KBJR-TV			1	1
	KDLH			1	1
	Total			2	2
1024373	WPDE-TV	1			1
	WWMB	1			1
	Total	2			2
1024374	WUNI	1			1
	Total	1			1
1024378	WDBJ	1			1
	Total	1			1
1024380	WMSY-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1024381	WSLS-TV			1	1
	Total			1	1
1024383	WGME-TV	1			1
	Total	1			1
1024403	WSBN-TV		1		1
	Total		1		1
1024425	KYTX		1		1
	Total		1		1
1024461	KCCW-TV		1		1
	Total		1		1
1024490	KCWV	1			1
	Total	1			1
1024492	WYTV	1			1
	Total	1			1
1024705	KFTC			1	1
	Total			1	1
1024797	WVXF			1	1
	Total			1	1
1024861	KKTV			1	1
	Total			1	1
1024862	WHLA-TV			1	1
	Total			1	1
1024968	WPSU-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1024968	Total		1		1
1024985	WJAN-CD			1	1
	Total			1	1
1025131	KMTV-TV			1	1
	Total			1	1
1025144	WTAE-TV			1	1
	Total			1	1
1025277	KEYC-TV		1		1
	Total		1		1
1025328	KTSC			1	1
	Total			1	1
1025374	WLFI-TV		1		1
	Total		1		1
1025392	WTVG		1		1
	Total		1		1
1025408	WPMT			1	1
	Total			1	1
1025602	KNLC		1		1
	Total		1		1
1025608	WCWJ	1			1
	Total	1			1
1025694	KSAX		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1025878	WWAT-CD			1	1
	Total			1	1
1025886	KSTF		1		1
	Total		1		1
1025900	WSST-TV	1			1
	Total	1			1
1025912	KTAL-TV			1	1
	Total			1	1
1025917	KWWL		1		1
	Total		1		1
1025971	KDKA-TV			1	1
	WPCW			1	1
	Total			2	2
1025977	KFOX-TV	1			1
	Total	1			1
1026013	KBIN-TV	1			1
	Total	1			1
1026014	KHIN		1		1
	Total		1		1
1026015	KIIN	1			1
	Total	1			1
1026025	KPTM		1		1
	KXVO		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1026025	Total		2		2
1026127	WTTV		1		1
	Total		1		1
1026130	WBOA-CD	1			1
	WQVC-CD	1			1
	Total	2			2
1026131	WPGH-TV		1		1
	WPNT		1		1
	Total		2		2
1026197	KHGI-TV		1		1
	Total		1		1
1026263	KHMT			1	1
	Total			1	1
1026377	WIPX-TV		1		1
	Total		1		1
1026468	KSKT-CD	1			1
	Total	1			1
1026518	WOWT	1			1
	Total	1			1
1026527	KWNB-TV		1		1
	Total		1		1
1026532	KNBC		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1026534	WWCP-TV			1	1
	Total			1	1
1026545	WBPH-TV		1		1
	Total		1		1
1026553	WBFS-TV			1	1
	WFOR-TV			1	1
	WLTU-DT			1	1
	WPMF-CD			1	1
	WSFL-TV			1	1
	WTVJ			1	1
	Total			6	6
1026644	W24DB			2	2
	WSWB		1		1
	Total		1	2	1 2
1026658	KHGI-CD			1	1
	Total			1	1
1026679	WWCW			1	1
	Total			1	1
1026694	WTAJ-TV		1		1
	Total		1		1
1026736	WQPX-TV		1		1
	Total		1		1
1026740	KBSD-DT		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1026740	Total		1		1
1026741	KSAS-TV	1			1
	Total	1			1
1026742	KOCW	1			1
	Total	1			1
1026744	WUCF-TV			1	1
	Total			1	1
1026745	KAAS-TV	1			1
	Total	1			1
1026755	WTSD-CD			1	1
	Total			1	1
1026950	KQEG-CA		1		1
	Total		1		1
1026954	WWLM-CD			1	1
	Total			1	1
1026992	WVIA-TV			1	1
	Total			1	1
1027110	WHYY-TV		1		1
	WPHL-TV			1	1
	Total		1	1	1 1
1027116	WPBO		1		1
	Total		1		1
1027125	WATM-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1027125	Total		1		1
1027162	WBRE-TV		1		1
	WYOU		1		1
	Total		2		2
1027164	KXNE-TV		1		1
	Total		1		1
1027196	WAWV-TV		1		1
	WTWO		1		1
	Total		2		2
1027316	WMVH-CD	1			1
	Total	1			1
1027322	WLFL			1	1
	WNCN			1	1
	WRAL-TV			1	1
	WRAZ			1	1
	Total			4	4
1027505	WIDP	1			1
	WVSN	1			1
	Total	2			2
1027511	WTVW		1		1
	Total		1		1
1027512	WDNI-CD		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1027514	WLAJ		1		1
	Total		1		1
1027529	WLPH-CD			1	1
	Total			1	1
1027596	WNDU-TV			1	1
	Total			1	1
1027622	WANE-TV		1		1
	Total		1		1
1027632	WPXA-TV			1	1
	Total			1	1
1027741	KSNB-TV			1	1
	Total			1	1
1027886	KFBB-TV			1	1
	Total			1	1
1027896	WFYI		1		1
	Total		1		1
1028035	WWSB			1	1
	Total			1	1
1028084	WFLX	1			1
	WHDT	1			1
	WXEL-TV	1			1
	Total	3			3
1028214	WFWC-CD	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1028214	Total	1			1
1028292	WFLA-TV			1	1
	WFTS-TV			1	1
	WTTA			1	1
	Total			3	3
1028295	KGLA-DT		1		1
	Total		1		1
1028325	KJUD	1			1
	Total	1			1
1028357	WWTO-TV	1			1
	Total	1			1
1028414	WKYI-CD			1	1
	Total			1	1
1028421	WDRB		1		1
	WMYO		1		1
	Total		2		2
1028555	KRIV	1			1
	KUHT	1			1
	Total	2			2
1028657	KPXM-TV			1	1
	Total			1	1
1028659	WYPX-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1028661	WTSN-CD		1		1
	WYYW-CD		1		1
	Total		2		2
1028721	KOLR	1			1
	KOZL-TV	1			1
	Total	2			2
1028722	KRBK			1	1
	Total			1	1
1028921	WDYB-CD			1	1
	Total			1	1
1028983	WVUT		1		1
	Total		1		1
1028993	KCCO-TV			1	1
	Total			1	1
1029019	K33LN-D		1		1
	Total		1		1
1029135	WYME-CD			1	1
	Total			1	1
1029219	WYIN			1	1
	Total			1	1
1029312	WRTV			1	1
	Total			1	1
1029441	WISE-TV		1		1

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1029441	WPTA		1		1
	Total		2		2
1029536	KGMD-TV			1	1
	KHAW-TV			1	1
	KHVO			1	1
	KWHD			1	1
	Total			4	4
1029604	WPBT			1	1
	Total			1	1
1029632	WTVX	1			1
	Total	1			1
1029807	WUFT			1	1
	Total			1	1
1029925	KHNE-TV		1		1
	Total		1		1
1029929	KLNE-TV			1	1
	Total			1	1
1029930	KMNE-TV		1		1
	Total		1		1
1029931	KTNE-TV			1	1
	Total			1	1
1029932	KRNE-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1029933	KPNE-TV		1		1
	Total		1		1
1029934	KYNE-TV		1		1
	Total		1		1
1029935	KUON-TV		1		1
	Total		1		1
1029952	WLPD-CD			1	1
	Total			1	1
1029953	WNDY-TV	1			1
	Total	1			1
1029954	WTHI-TV			1	1
	Total			1	1
1029956	WDSE			1	1
	Total			1	1
1030089	KMTW		1		1
	Total		1		1
1030383	WKYT-TV			1	1
	Total			1	1
1030677	WSBT-TV			1	1
	Total			1	1
1030678	WPGX			1	1
	Total			1	1
1030684	WTTK		1		1

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1030684	WXIN		1		1
	Total		2		2
1030817	WIIH-CD		1		1
	WISH-TV		1		1
	Total		2		2
1030880	WGEN-TV			1	1
	WSBS-TV			1	1
	Total			2	2
1030889	WJTC		1		1
	Total		1		1
1030890	WEVV-TV			1	1
	Total			1	1
1030891	WFWA		1		1
	Total		1		1
1030952	WSPF-CD	1			1
	WTOG	1			1
	Total	2			2
1031016	WHAS-TV			1	1
	Total			1	1
1031203	WVUP-CD			1	1
	Total			1	1
1031204	WTXL-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1031215	WFMZ-TV			1	1
	WLVT-TV			1	1
	Total			2	2
1031274	KSNC	1			1
	Total	1			1
1031276	KSNG	1			1
	Total	1			1
1031277	KSNK	1			1
	Total	1			1
1031607	KSQA		1		1
	Total		1		1
1031700	WRMD-CD	1			1
	Total	1			1
1031756	WGAL		1		1
	Total		1		1
1031769	KIKU		1		1
	Total		1		1
1031790	WSB-TV		1		1
	Total		1		1
1031833	W39CA-D	1			1
	Total	1			1
1031842	WTOM-TV	1			1
	Total	1			1

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1031878	KWCM-TV			1	1
	Total			1	1
1031880	WDIO-DT		1		1
	Total		1		1
1031887	KTKA-TV	1			1
	Total	1			1
1031891	KBSL-DT			1	1
	Total			1	1
1032005	KFJX		1		1
	KOAM-TV		1		1
	Total		2		2
1032096	WOGX	1			1
	Total	1			1
1032097	WOFL		1		1
	Total		1		1
1032128	KING-TV			1	1
	KONG			1	1
	Total			2	2
1032235	WPXI			1	1
	Total			1	1
1032381	KBCB			1	1
	Total			1	1
1032389	KAPP		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1032389	Total		1		1
1032433	KIMA-TV		1		1
	KUNW-CD		1		1
	Total		2		2
1032435	KEPR-TV		1		1
	KVVK-CD		1		1
	Total		2		2
1032456	KOMO-TV			1	1
	KUNS-TV			1	1
	Total			2	2
1032600	KLEW-TV		1		1
	Total		1		1
1032644	KOOD		1		1
	Total		1		1
1032645	KCOY-TV		1		1
	KTSB-CD			1	1
	Total		1	1	1 1
1032646	KDCK		1		1
	Total		1		1
1032647	KSWK		1		1
	Total		1		1
1032648	WIBW-TV	1			1
	Total	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1032651	KTMJ-CD		1		1
	KTWU		1		1
	Total		2		2
1032655	WJCL	1			1
	Total	1			1
1032657	WGSA		1		1
	WTGS		1		1
	Total		2		2
1032658	WLTZ		1		1
	Total		1		1
1032663	WPXR-TV		1		1
	Total		1		1
1032667	KBSH-DT		1		1
	Total		1		1
1032881	KHQ-TV			1	1
	Total			1	1
1032913	WDPB		1		1
	Total		1		1
1032916	KCTS-TV			1	1
	Total			1	1
1032919	WBXC-CD			1	1
	Total			1	1
1032950	KTBW-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1032950	Total	1			1
1032951	KBTC-TV			1	1
	Total			1	1
1032959	WCIU-TV	1			1
	WEDE-CD	1			1
	WFLD	1			1
	WGN-TV	1			1
	WMAQ-TV	1			1
	WMEU-CD	1			1
	WPWR-TV	1			1
	WSNS-TV	1			1
	WTTW	1			1
	WWME-CD	1			1
	Total	10			10
1032960	WBBM-TV			1	1
	WCPX-TV			1	1
	WJYS			1	1
	WLS-TV	1			1
	WXFT-DT			1	1
	Total	1		4	4 1
1032989	KSNT	1			1
	Total	1			1
1033014	KGPX-TV		1		1

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1033014	Total		1		1
1033163	KPDX		1		1
	KPTV		1		1
	Total		2		2
1033248	KFFV			1	1
	KSTW			1	1
	Total			2	2
1033277	KUPK	1			1
	Total	1			1
1033280	WFXP		1		1
	WJET-TV		1		1
	Total		2		2
1033353	KCWY-DT		1		1
	Total		1		1
1033400	WBIN-TV			1	1
	WYCN-CD			1	1
	Total			2	2
1033433	WNED-TV		1		1
	WNLO		1		1
	Total		2		2
1033524	WSES		1		1
	Total		1		1
1033525	WGWW	1			1

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1033525	Total	1			1
1033562	KNHL		1		1
	Total		1		1
1033564	KCKA			1	1
	Total			1	1
1033566	KAYU-TV		1		1
	Total		1		1
1033593	WBOY-TV		1		1
	Total		1		1
1033594	KEPB-TV			1	1
	KVAL-TV			1	1
	Total			2	2
1033663	WQOW		1		1
	Total		1		1
1033664	WEAU			1	1
	Total			1	1
1033720	WIRT-DT		1		1
	WRPT		1		1
	Total		2		2
1033740	WHTM-TV			1	1
	Total			1	1
1033792	WPXG-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1033919	WHA-TV		1		1
	WISC-TV		1		1
	WKOW		1		1
	WMSN-TV	1			1
	Total	1	3		3
1033978	WTNB-CD		1		1
	Total		1		1
1033992	KREM			1	1
	KSKN			1	1
	Total			2	2
1033995	WMUR-TV		1		1
	Total		1		1
1034197	WQXT-CD			1	1
	Total			1	1
1034213	KWSU-TV		1		1
	Total		1		1
1034290	WRCF-CD			1	1
	WZXZ-CD	1			1
	Total	1		1	1 1
1034390	WVNS-TV		1		1
	Total		1		1
1034393	WTMJ-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1034466	WDTV			1	1
	WVFX			1	1
	Total			2	2
1034538	KREY-TV	1			1
	Total	1			1
1034539	KREX-TV		1		1
	Total		1		1
1034540	KREG-TV		1		1
	Total		1		1
1034694	WEKW-TV			1	1
	WVMA-CD			1	1
	Total			2	2
1034696	WENH-TV		1		1
	Total		1		1
1034698	WLED-TV			1	1
	Total			1	1
1034782	WACY-TV			1	1
	WGBA-TV			1	1
	Total			2	2
1034933	KEVU-CD		1		1
	KLSR-TV		1		1
	Total		2		2
1034934	KOTI			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1034934	Total			1	1
1034935	KOBI	1			1
	Total	1			1
1034986	WFFT-TV		1		1
	Total		1		1
1035110	KOAC-TV		1		1
	Total		1		1
1035121	WSAZ-TV			1	1
	Total			1	1
1035128	WNPB-TV			1	1
	Total			1	1
1035131	WSWP-TV		1		1
	Total		1		1
1035146	WTRF-TV		1		1
	Total		1		1
1035149	WXOW		1		1
	Total		1		1
1035173	WLOS		1		1
	WUNF-TV		1		1
	Total		2		2
1035175	WDBB	1			1
	Total	1			1
1035226	WLEF-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1035226	Total			1	1
1035227	WHWC-TV			1	1
	Total			1	1
1035248	WEUX	1			1
	Total	1			1
1035284	KNDO	1			1
	Total	1			1
1035285	KNDU	1			1
	Total	1			1
1035286	WEDN		1		1
	Total		1		1
1035293	WUPV		1		1
	Total		1		1
1035339	WABI-TV		1		1
	Total		1		1
1035353	WCBB		1		1
	Total		1		1
1035360	WCJB-TV		1		1
	Total		1		1
1035408	KDLO-TV			1	1
	Total			1	1
1035413	KELO-TV		1		1
	KSFY-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1035413	Total		1	1	1
					1
1035414	KCLO-TV		1		1
	Total		1		1
1035417	WHBF-TV			1	1
	Total			1	1
1035419	WCDC-TV			1	1
	Total			1	1
1035420	WLNS-TV		1		1
	Total		1		1
1035474	KYW-TV			1	1
	WFMZ-TV			1	1
	WPVI-TV			1	1
	Total			3	3
1035532	WKBT-DT	1			1
	Total	1			1
1035534	KAGN-CD		1		1
	Total		1		1
1035536	WBAY-TV			1	1
	WPNE-TV			1	1
	Total			2	2
1035539	WQRF-TV		1		1
	WTVO		1		1
	Total		2		2

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1035558	WBAL-TV			1	1
	WJZ-TV			1	1
	WMAR-TV			1	1
	Total			3	3
1035766	WISN-TV			1	1
	Total			1	1
1035771	WKRG-TV		1		1
	Total		1		1
1035875	KHOG-TV	1			1
	Total	1			1
1035880	KOAB-TV			1	1
	KOHD			1	1
	Total			2	2
1036003	WVTM-TV		1		1
	Total		1		1
1036023	WKMJ-TV		1		1
	WKPC-TV		1		1
	Total		2		2
1036026	WLPS-CD		1		1
	Total		1		1
1036028	K19GH-D		1		1
	KEZI		1		1
	KMTR		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1036028	Total		3		3
1036068	WTPX-TV			1	1
	Total			1	1
1036277	WEMW-CD			1	1
	Total			1	1
1036304	WUTB			1	1
	Total			1	1
1036344	WTJP-TV		1		1
	Total		1		1
1036416	WIIQ	1			1
	Total	1			1
1036417	WGIQ		1		1
	Total		1		1
1036418	WFIQ		1		1
	Total		1		1
1036419	WEIQ		1		1
	Total		1		1
1036421	WCIQ	1			1
	Total	1			1
1036422	WAIQ		1		1
	Total		1		1
1036423	WHIQ		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1036432	WCOV-TV	1			1
	WSFA	1			1
	Total	2			2
1036480	WWKH-CD			1	1
	Total			1	1
1036485	WPCP-CD			1	1
	Total			1	1
1036506	WJMB-CD	1			1
	Total	1			1
1036554	KASN		1		1
	KETS		1		1
	Total		2		2
1036555	KLRT-TV			1	1
	Total			1	1
1036562	WICD		1		1
	Total		1		1
1036576	WDCW		1		1
	Total		1		1
1036610	WFDC-DT			1	1
	WIAV-CD			1	1
	WMDO-CD			1	1
	WRC-TV			1	1
	WZDC-CD			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1036610	Total			5	5
1036633	WTZT-CD		1		1
	Total		1		1
1036645	WCPB			1	1
	Total			1	1
1036746	WWPB			1	1
	Total			1	1
1036764	WJMY-CD		1		1
	Total		1		1
1036769	KYVV-TV	1			1
	Total	1			1
1036777	WLYH-TV		1		1
	Total		1		1
1036778	WHP-TV		1		1
	Total		1		1
1036816	WFPX-TV		1		1
	Total		1		1
1036848	WHAG-TV		1		1
	Total		1		1
1037002	WEAC-CD		1		1
	Total		1		1
1037278	WVUA			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1037283	WMJF-CD			1	1
	Total			1	1
1037392	WMDE		1		1
	Total		1		1
1037622	KMYA-DT		1		1
	Total		1		1
1037671	KWOG		1		1
	Total		1		1
1037677	KHMF-CA		1		1
	Total		1		1
1037718	WAKA			1	1
	WNCF			1	1
	Total			2	2
1037792	WMEA-TV		1		1
	Total		1		1
1037798	KPTS		1		1
	Total		1		1
1037800	WTFX-TV		1		1
	Total		1		1
1037808	WICU-TV			1	1
	Total			1	1
1037877	WCCB		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1037881	WWTW	1			1
	Total	1			1
1037961	KBME-TV	1			1
	Total	1			1
1037962	KFME	1			1
	Total	1			1
1037968	KSRE	1			1
	Total	1			1
1037969	KWSE			1	1
	KXMD-TV			1	1
	Total			2	2
1037970	KDSE	1			1
	KXMA-TV	1			1
	Total	2			2
1038000	KFFS-CD		1		1
	KWNL-CD		1		1
	Total		2		2
1038001	KKAF-CD		1		1
	Total		1		1
1038012	KFTA-TV		1		1
	Total		1		1
1038022	KJRE			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1038046	WWDT-CD			1	1
	Total			1	1
1038158	WOPX-TV		1		1
	Total		1		1
1038195	KEMV		1		1
	Total		1		1
1038196	KETG		1		1
	Total		1		1
1038197	KAFT		1		1
	Total		1		1
1038198	KTEJ		1		1
	Total		1		1
1038226	WCET		1		1
	WLWT		1		1
	Total		2		2
1038230	WAPT			1	1
	Total			1	1
1038716	KXMC-TV	1			1
	Total	1			1
1038718	KXMB-TV	1			1
	Total	1			1
1038731	KRDK-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1038758	WDAZ-TV		1		1
	Total		1		1
1038760	WDAY-TV		1		1
	Total		1		1
1038761	KMCY	1			1
	Total	1			1
1038762	KBMY	1			1
	Total	1			1
1038765	WFSG	1			1
	Total	1			1
1039483	KIDK			1	1
	Total			1	1
1039549	KFDF-CD		1		1
	Total		1		1
1039554	WHBQ-TV		1		1
	Total		1		1
1039555	WMVJ-CD			1	1
	Total			1	1
1039874	WLOX	1			1
	Total	1			1
1039950	KETZ			1	1
	KTVE			1	1
	Total			2	2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1039959	KAKE	1			1
	Total	1			1
1039961	KLBY		1		1
	Total		1		1
1040035	KMVT		1		1
	Total		1		1
1040042	WITF-TV			1	1
	Total			1	1
1040116	WTCT			1	1
	Total			1	1
1040183	WEPH		1		1
	WLOV-TV		1		1
	WTVB		1		1
	Total		3		3
1040329	KMOS-TV		1		1
	Total		1		1
1040389	WDHN		1		1
	Total		1		1
1040501	WCLL-CD		1		1
	WCMH-TV		1		1
	WDEM-CD		1		1
	Total		3		3
1040514	KFDM	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1040514	Total	1			1
1040625	KLTM-TV		1		1
	KMLU		1		1
	KNOE-TV		1		1
	Total		3		3
1040815	KTRK-TV	1			1
	Total	1			1
1040880	KUPX-TV	1			1
	Total	1			1
1040892	KUTH-DT			1	1
	Total			1	1
1041008	W17DJ-D	1			1
	WAAY-TV		1		1
	WZDX		1		1
	Total	1	2		2
1041013	WCBI-TV		1		1
	Total		1		1
1041035	WMAO-TV		1		1
	Total		1		1
1041037	WMAW-TV		1		1
	Total		1		1
1041039	WMAB-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1041044	WMAV-TV		1		1
	Total		1		1
1041045	WMAE-TV		1		1
	Total		1		1
1041049	WMAU-TV		1		1
	Total		1		1
1041052	WMAH-TV		1		1
	Total		1		1
1041065	WTOK-TV		1		1
	Total		1		1
1041089	KPSD-TV	1			1
	Total	1			1
1041373	WTVF			1	1
	Total			1	1
1041402	WLRN-TV			1	1
	Total			1	1
1041410	WHDO-CD		1		1
	Total		1		1
1041547	WLMB		1		1
	Total		1		1
1041578	KORY-CD			1	1
	Total			1	1
1041579	WCLJ-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1041579	Total	1			1
1041596	WCCV-TV	1			1
	Total	1			1
1041624	WCCT-TV			1	1
	WEDH			1	1
	WTIC-TV			1	1
	Total			3	3
1041734	WOUB-TV		1		1
	Total		1		1
1041794	KGIN	1			1
	Total	1			1
1041796	KOLN	1			1
	Total	1			1
1041926	KUID-TV		1		1
	Total		1		1
1041931	KPRY-TV		1		1
	Total		1		1
1041932	KABY-TV			1	1
	Total			1	1
1042028	WEHT		1		1
	Total		1		1
1042104	KDLT-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1042105	KDLV-TV		1		1
	Total		1		1
1042152	WYCX-CD		1		1
	Total		1		1
1042236	KSPS-TV		1		1
	Total		1		1
1042276	KEVN-TV			1	1
	Total			1	1
1042277	KIVV-TV		1		1
	Total		1		1
1042287	WHLT			1	1
	Total			1	1
1042326	WXVT		1		1
	Total		1		1
1042361	KHSD-TV			1	1
	Total			1	1
1042456	KTTM	1			1
	Total	1			1
1042483	WMCF-TV		1		1
	Total		1		1
1042631	WBIR-TV		1		1
	Total		1		1
1042633	WJTV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1042633	Total			1	1
1042692	WDSI-TV		1		1
	WFLI-TV		1		1
	Total		2		2
1042697	WJHL-TV			1	1
	Total			1	1
1042698	WPSD-TV	1			1
	Total	1			1
1042762	WYHB-CD	1			1
	Total	1			1
1042763	WTCI	1			1
	Total	1			1
1042896	KAID	1			1
	Total	1			1
1042916	WIS	1			1
	Total	1			1
1042963	WCBD-TV		1		1
	WCIV		1		1
	WTAT-TV		1		1
	Total		3		3
1042983	WDCA			1	1
	WTTG			1	1
	Total			2	2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1042989	WACP		1		1
	WWSI			1	1
	Total		1	1	1 1
1042998	WNKY		1		1
	Total		1		1
1043028	WAPW-CD	1			1
	Total	1			1
1043102	WVEC		1		1
	Total		1		1
1043106	WFIE		1		1
	Total		1		1
1043131	WYMT-TV		1		1
	Total		1		1
1043194	WLJT-DT			1	1
	Total			1	1
1043201	WMDT			1	1
	Total			1	1
1043248	KTBC		1		1
	Total		1		1
1043251	WJHG-TV			1	1
	WMBB			1	1
	Total			2	2
1043696	WKNX-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1043696	Total		1		1
1043707	KDIN-TV	1			1
	WHO-DT	1			1
	WOI-DT	1			1
	Total	3			3
1043708	WREG-TV		1		1
	Total		1		1
1043727	WHNT-TV		1		1
	Total		1		1
1043736	WDEF-TV		1		1
	Total		1		1
1043762	WPXX-TV		1		1
	Total		1		1
1043939	WRFB	1			1
	Total	1			1
1043940	WHTN		1		1
	Total		1		1
1043980	WCTX			1	1
	WTNH			1	1
	Total			2	2
1044020	WKHA		1		1
	Total		1		1
1044021	WKMA-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1044021	Total		1		1
1044034	WLEX-TV			1	1
	WTVQ-DT			1	1
	Total			2	2
1044036	WKMU		1		1
	Total		1		1
1044037	WKPD		1		1
	Total		1		1
1044038	WKOH		1		1
	Total		1		1
1044039	WCVN-TV		1		1
	Total		1		1
1044040	WKLE		1		1
	Total		1		1
1044041	WKMR		1		1
	Total		1		1
1044042	WKAS		1		1
	Total		1		1
1044043	WKSO-TV		1		1
	Total		1		1
1044044	WKZT-TV		1		1
	Total		1		1
1044045	WKPI-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1044045	Total		1		1
1044046	WKGB-TV		1		1
	Total		1		1
1044149	KCEC			1	1
	KWGN-TV			1	1
	Total			2	2
1044153	WGSC-CD			1	1
	WGSJ-CD			1	1
	Total			2	2
1044169	K20DN-D			1	1
	K24HH-D			1	1
	KFDX-TV			1	1
	Total			3	3
1044171	KSAT-TV		1		1
	Total		1		1
1044173	KAMU-TV			1	1
	Total			1	1
1044237	WBFF			1	1
	WNUV			1	1
	Total			2	2
1044421	KTVI		1		1
	Total		1		1
1044489	WLTX		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1044489	Total		1		1
1044529	WZRB		1		1
	Total		1		1
1044614	WETV-CD		1		1
	Total		1		1
1044629	WJDE-LD	1			1
	Total	1			1
1044673	WJFW-TV			1	1
	Total			1	1
1044680	WWDG-CD	1			1
	Total	1			1
1044718	KDTV-DT			1	1
	KSTS			1	1
	Total			2	2
1044756	KHPF-CD	1			1
	Total	1			1
1044868	KUPT			1	1
	Total			1	1
1044870	WBXX-TV		1		1
	Total		1		1
1044874	WWIT		1		1
	Total		1		1
1044881	WJFB		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1044881	Total		1		1
1044896	KRHD-CD	1			1
	Total	1			1
1044969	WBNA		1		1
	Total		1		1
1045081	KGNS-TV		1		1
	Total		1		1
1045121	WNJB			1	1
	Total			1	1
1045123	WMBC-TV			1	1
	WNJN			1	1
	Total			2	2
1045124	WNJT	1			1
	Total	1			1
1045125	WMCN-TV			1	1
	WNJS			1	1
	WPSJ-CD			1	1
	Total			3	3
1045132	WWDP			1	1
	Total			1	1
1045192	KXLY-TV		1		1
	Total		1		1
1045226	KAUT-TV			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1045226	KETA-TV		1		1
	KFOR-TV			1	1
	KOCM			1	1
	KOPX-TV			1	1
	KSBI			1	1
	KWTV-DT			1	1
	Total		1	6	1 6
1045315	WNYO-TV	1			1
	Total	1			1
1045371	WMYA-TV		1		1
	Total		1		1
1045531	KFWD		1		1
	KMPX		1		1
	Total		2		2
1045602	WMTW		1		1
	Total		1		1
1045615	WVPB-TV			1	1
	Total			1	1
1045776	WGNM		1		1
	Total		1		1
1045804	WNYJ-TV	1			1
	Total	1			1
1045869	WFXG		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1045869	Total		1		1
1045871	K22JA-D	1			1
	KRIS-TV	1			1
	Total	2			2
1045893	WLWK-CD			1	1
	Total			1	1
1046007	WMPN-TV		1		1
	Total		1		1
1046016	WFSB		1		1
	Total		1		1
1046229	KWTX-TV		1		1
	Total		1		1
1046230	WMGM-TV		1		1
	Total		1		1
1046243	KMOT			1	1
	Total			1	1
1046244	KVLY-TV		1		1
	Total		1		1
1046272	KMBH			1	1
	Total			1	1
1046283	KSCW-DT			1	1
	KWCH-DT			1	1
	Total			2	2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1046926	WZME		1		1
	Total		1		1
1046930	WDAM-TV	1			1
	Total	1			1
1046933	KFYR-TV		1		1
	Total		1		1
1046935	WUTF-DT			1	1
	Total			1	1
1047010	WSIL-TV		1		1
	Total		1		1
1047055	KEDT			1	1
	Total			1	1
1047092	WBME-CD		1		1
	WDJT-TV		1		1
	WMLW-TV		1		1
	Total		3		3
1047124	WCTE		1		1
	Total		1		1
1047137	KLAX-TV		1		1
	Total		1		1
1047274	W09DB-D	1			1
	Total	1			1
1047304	WJGN-CD		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1047304	Total		1		1
1047306	KCEN-TV		1		1
	Total		1		1
1047348	KIAH	1			1
	KPRC-TV	1			1
	Total	2			2
1047397	KITU-TV		1		1
	Total		1		1
1047398	KLUJ-TV		1		1
	Total		1		1
1047401	KFTV-DT	1			1
	Total	1			1
1047436	KCEB		1		1
	KFXK-TV			1	1
	Total		1	1	1 1
1047437	KBMT	1			1
	Total	1			1
1047439	KTRE		1		1
	Total		1		1
1047731	KYLE-TV		1		1
	Total		1		1
1047750	KTTZ-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1047783	KCOS			1	1
	Total			1	1
1047885	KUVS-DT		1		1
	Total		1		1
1047886	KETK-TV			1	1
	Total			1	1
1047920	KDBC-TV		1		1
	KINT-TV		1		1
	Total		2		2
1047963	WVPX-TV			1	1
	Total			1	1
1048076	KNOP-TV		1		1
	Total		1		1
1048127	KAZD			1	1
	Total			1	1
1048215	WKON		1		1
	Total		1		1
1048233	KPTB-DT	1			1
	Total	1			1
1048234	KPCB-DT	1			1
	Total	1			1
1048460	KLST			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1048502	KNBN		1		1
	Total		1		1
1048503	KIEM-TV	1			1
	Total	1			1
1048587	KACV-TV			1	1
	KAMR-TV			1	1
	KCIT			1	1
	KEYU			1	1
	Total			4	4
1048797	KVTJ-DT		1		1
	Total		1		1
1048801	WBTW		1		1
	Total		1		1
1048806	WBKO		1		1
	WKYU-TV		1		1
	Total		2		2
1048813	WMC-TV	1			1
	Total	1			1
1048835	KGBT-TV			1	1
	Total			1	1
1048848	KPLE-CD			1	1
	Total			1	1
1048882	KNRR	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1048882	Total	1			1
1048883	KJRR	1			1
	Total	1			1
1048931	KMYT-TV		1		1
	KOKI-TV		1		1
	Total		2		2
1049183	KNVN	1			1
	Total	1			1
1049364	KVRR	1			1
	Total	1			1
1049466	KVTH-DT		1		1
	Total		1		1
1049506	KCVU		1		1
	Total		1		1
1049507	WBBZ-TV		1		1
	Total		1		1
1049708	KCPQ			1	1
	Total			1	1
1049725	KUSD-TV			1	1
	Total			1	1
1049729	KESD-TV		1		1
	Total		1		1
1049731	KZSD-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1049731	Total	1			1
1049733	KDSD-TV		1		1
	Total		1		1
1049734	KQSD-TV			1	1
	Total			1	1
1049735	KTSD-TV	1			1
	Total	1			1
1049742	KBHE-TV	1			1
	Total	1			1
1049754	WJKT		1		1
	Total		1		1
1049788	WSAV-TV		1		1
	Total		1		1
1049789	KAUZ-TV	1			1
	Total	1			1
1049888	KCBD	1			1
	Total	1			1
1050255	KJTL			1	1
	Total			1	1
1050340	KXFX-CD			1	1
	Total			1	1
1050398	KBVO-CD		1		1
	KNVA		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1050398	KTFO-CD			1	1
	KXAN-TV		1		1
	Total		3	1	3 1
1050399	KBVO			1	1
	Total			1	1
1050430	KTMF	1			1
	Total	1			1
1050614	WEPX-TV			1	1
	Total			1	1
1050615	WLPX-TV			1	1
	Total			1	1
1050617	KHPB-CD	1			1
	Total	1			1
1050735	WSMV-TV		1		1
	Total		1		1
1050833	KQCD-TV			1	1
	Total			1	1
1050840	KUMV-TV			1	1
	Total			1	1
1051020	KNVO		1		1
	KTFV-CD		1		1
	Total		2		2
1051224	KWYB	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1051224	Total	1			1
1051225	KTGF		1		1
	Total		1		1
1051231	WCSC-TV	1			1
	WGWG	1			1
	WITV	1			1
	Total	3			3
1051406	KETF-CD			1	1
	KVTV			1	1
	KXOF-CD			1	1
	Total			3	3
1051408	KMID			1	1
	KPEJ-TV			1	1
	Total			2	2
1051670	WETA-TV		1		1
	WHUT-TV		1		1
	WJLA-TV		1		1
	WPXW-TV			1	1
	WUSA		1		1
	Total		4	1	4 1
1051751	KABB	1			1
	Total	1			1
1051793	WMOW		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1051793	Total		1		1
1051813	KSIN-TV		1		1
	Total		1		1
1051861	WABG-TV		1		1
	Total		1		1
1051895	KCRP-CD		1		1
	Total		1		1
1051991	WPEC	1			1
	Total	1			1
1052003	KMYS			1	1
	Total			1	1
1052057	KTXS-TV		1		1
	Total		1		1
1052059	WJPX	1			1
	Total	1			1
1052060	W47EI-D	1			1
	Total	1			1
1052113	KXXV	1			1
	Total	1			1
1052115	KFDA-TV	1			1
	Total	1			1
1052125	KLTV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1052156	WATE-TV			1	1
	WPXK-TV			1	1
	WTNZ	1			1
	Total	1		2	2 1
1052324	WTSF		1		1
	Total		1		1
1052328	WCMW		1		1
	Total		1		1
1052343	WKHU-CD	1			1
	Total	1			1
1052448	WJYL-CD		1		1
	WWJS-CD		1		1
	Total		2		2
1052655	KUVN-CD	1			1
	Total	1			1
1052705	KAKW-DT		1		1
	Total		1		1
1052725	KPXR-TV		1		1
	Total		1		1
1052729	WYFF			1	1
	Total			1	1
1053076	KFPX-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1053093	KCWT-CD		1		1
	Total		1		1
1053312	KMYU		1		1
	Total		1		1
1053380	KULX-CD			1	1
	Total			1	1
1053401	KIDY		1		1
	Total		1		1
1053536	WOAY-TV		1		1
	Total		1		1
1053804	KTLA		1		1
	Total		1		1
1053967	K31FD-D	1			1
	KCLP-CA	1			1
	KNIN-TV	1			1
	KTRV-TV	1			1
	Total	4			4
1053974	KMLM-DT	1			1
	Total	1			1
1054150	KXAS-TV			1	1
	KXTX-TV			1	1
	Total			2	2
1054166	KGMM-CD		1		1

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1054166	KVDA		1		1
	KWEX-DT		1		1
	Total		3		3
1054167	KVII-TV		1		1
	Total		1		1
1054170	KSAN-TV		1		1
	Total		1		1
1054292	WKNO		1		1
	Total		1		1
1054337	WJGV-CD	1			1
	Total	1			1
1054347	KAMC			1	1
	KLBK-TV			1	1
	Total			2	2
1054358	WOSU-TV		1		1
	Total		1		1
1054538	WAPK-CD		1		1
	WKPT-TV		1		1
	WOPI-CD		1		1
	Total		3		3
1054608	WJW			1	1
	Total			1	1
1054977	KSWO-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1054977	Total		1		1
1055009	KATA-CD		1		1
	KUVN-DT		1		1
	Total		2		2
1055076	WTVT		1		1
	Total		1		1
1055244	WOLF-TV		1		1
	Total		1		1
1055265	KFXB-TV		1		1
	Total		1		1
1055307	KCOP-TV		1		1
	KTTV		1		1
	Total		2		2
1055358	WACH			1	1
	WKTC		1		1
	WOLO-TV		1		1
	Total		2	1	2 1
1055367	KVTN-DT			1	1
	Total			1	1
1055705	WCSH		1		1
	Total		1		1
1055958	K31KK-D	1			1
	Total	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1055987	WPBM-CD		1		1
	Total		1		1
1056094	KWDK		1		1
	KWPX-TV		1		1
	Total		2		2
1056234	WPCB-TV		1		1
	Total		1		1
1056373	KLRN			1	1
	Total			1	1
1056488	KTLM		1		1
	Total		1		1
1056647	KOAT-TV		1		1
	Total		1		1
1056648	WTVY			1	1
	Total			1	1
1056655	KWES-TV	1			1
	Total	1			1
1056705	WFXU		1		1
	Total		1		1
1056751	WZPX-TV		1		1
	Total		1		1
1056835	WITI			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1056891	W34DV-D	1			1
	Total	1			1
1057273	KIII		1		1
	Total		1		1
1057418	WBPI-CD			1	1
	Total			1	1
1057465	KCPT		1		1
	Total		1		1
1057473	WCLF			1	1
	WMOR-TV			1	1
	WTSP			1	1
	WVEA-TV			1	1
	WXPX-TV			1	1
	Total			5	5
1057482	WCGV-TV			1	1
	WIWN			1	1
	WMKE-CD			1	1
	WMVS			1	1
	WMVT			1	1
	WPXE-TV			1	1
	WVCY-TV			1	1
	WVTV			1	1
	Total			8	8

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1057592	WZGS-CD			1	1
	Total			1	1
1057617	WBIF	1			1
	Total	1			1
1057874	WHRO-TV			1	1
	WPXV-TV		1		1
	WTKR			1	1
	WTPC-TV			1	1
	WTVZ-TV			1	1
	Total		1	4	1 4
1057887	KOET		1		1
	Total		1		1
1057889	KWET		1		1
	Total		1		1
1057943	W50EA-D		1		1
	WATN-TV		1		1
	WBUY-TV			1	1
	WLMT		1		1
	Total		3	1	3 1
1057963	KMEG		1		1
	KPTH		1		1
	KTIV		1		1
	Total		3		3

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1058073	KNCT		1		1
	Total		1		1
1058179	KPXL-TV			1	1
	Total			1	1
1058237	WBOC-TV	1			1
	Total	1			1
1058328	KCNC-TV			1	1
	KMGH-TV		1		1
	KTVD		1		1
	KUSA		1		1
	Total		3	1	3 1
1058614	KTFQ-DT			1	1
	Total			1	1
1058749	WWCI-CD			1	1
	Total			1	1
1058822	WKRN-TV		1		1
	WNPT		1		1
	Total		2		2
1058824	WPAN	1			1
	Total	1			1
1058894	WJBF		1		1
	Total		1		1
1059064	WSPX-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1059064	Total		1		1
1059095	WYOW		1		1
	Total		1		1
1059111	WPXJ-TV			1	1
	Total			1	1
1059122	WXCB-CD			1	1
	Total			1	1
1059176	WRLK-TV		1		1
	Total		1		1
1059177	WEBA-TV		1		1
	Total		1		1
1059178	WJWJ-TV		1		1
	Total		1		1
1059179	WHMC		1		1
	Total		1		1
1059180	WJPM-TV		1		1
	Total		1		1
1059181	WNTV		1		1
	Total		1		1
1059182	WNSC-TV		1		1
	Total		1		1
1059183	WRET-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1059184	WRJA-TV		1		1
	Total		1		1
1059185	WNEH		1		1
	Total		1		1
1059337	KWKT-TV		1		1
	Total		1		1
1059411	WRDW-TV	1			1
	Total	1			1
1059622	KTBU		1		1
	KTXH		1		1
	KUVM-CD		1		1
	KXLN-DT		1		1
	KYAZ		1		1
	KZJL		1		1
	Total		6		6
1059649	WHDF		1		1
	Total		1		1
1059698	WXXV-TV		1		1
	Total		1		1
1059733	KDAF		1		1
	KDFI		1		1
	KDTN		1		1
	KDTX-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1059733	KERA-TV		1		1
	KPXD-TV		1		1
	KSTR-DT		1		1
	KTVT		1		1
	KTXA		1		1
	KTXD-TV		1		1
	Total		10		10
1059778	WALA-TV			1	1
	WFNA			1	1
	Total			2	2
1059876	WPXH-TV		1		1
	Total		1		1
1059897	W15BU-D		1		1
	Total		1		1
1059965	KGBS-CD		1		1
	Total		1		1
1060080	KIFI-TV			1	1
	Total			1	1
1060096	WPHY-CD			1	1
	Total			1	1
1060097	WYLN-LP	1			1
	Total	1			1
1060215	WHIZ-TV		1		1

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1060215	Total		1		1
1060304	WGBC		1		1
	WMDN		1		1
	Total		2		2
1060573	WOGC-CD		1		1
	WOHO-CD		1		1
	Total		2		2
1060721	WNNE			1	1
	WVTA			1	1
	Total			2	2
1060744	KLFY-TV		1		1
	KLPB-TV		1		1
	Total		2		2
1060842	WHME-TV		1		1
	Total		1		1
1060959	WMGT-TV		1		1
	Total		1		1
1061121	KPIC			1	1
	Total			1	1
1061304	KCWI-TV			1	1
	KDMI			1	1
	KDSM-TV			1	1
	Total			3	3

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1061305	WCWG			1	1
	WLXI			1	1
	WMYV			1	1
	WXLV-TV			1	1
	Total			4	4
1061710	WQAV-CD			1	1
	Total			1	1
1062073	KCFT-CD			1	1
	Total			1	1
1062237	WBXM-CD	1			1
	Total	1			1
1062330	WBBJ-TV		1		1
	Total		1		1
1062408	KBYU-TV			1	1
	KJZZ-TV			1	1
	KPNZ			1	1
	KSL-TV			1	1
	KTVX			1	1
	KUCW			1	1
	KUED			1	1
	KUEN			1	1
	KUTV			1	1
	Total			9	9

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1062556	WWPX-TV	1			1
	Total	1			1
1062557	WGPX-TV		1		1
	Total		1		1
1062571	WMAZ-TV		1		1
	Total		1		1
1062616	KQCW-DT			1	1
	Total			1	1
1062868	KBTX-TV			1	1
	Total			1	1
1062919	KWKB			1	1
	Total			1	1
1062973	WSIU-TV			1	1
	Total			1	1
1063200	WYSJ-CA			1	1
	Total			1	1
1063239	WUND-TV			1	1
	Total			1	1
1063249	WDSC-TV		1		1
	WEFS		1		1
	WESH		1		1
	WKMG-TV		1		1
	WRBW			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1063249	Total		4	1	4 1
1063265	WBVJ-LP		2		2
	Total		2		2
1063363	WDLI-TV		1		1
	Total		1		1
1063426	KNDM			1	1
	Total			1	1
1063427	KNDB			1	1
	Total			1	1
1063897	KAAL		1		1
	KSMQ-TV		1		1
	KXLT-TV		1		1
	Total		3		3
1063995	WUPX-TV		1		1
	Total		1		1
1064113	WLUK-TV	1			1
	Total	1			1
1064281	KTBO-TV	1			1
	Total	1			1
1064408	K25NG-D	1			1
	Total	1			1
1064518	KAIT	1			1
	Total	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1064625	KLEG-CD	1			1
	Total	1			1
1064671	WDPM-DT		1		1
	WMPV-TV		1		1
	WPMI-TV			1	1
	WSRE		1		1
	Total		3	1	3 1
1064695	WRNN-TV		1		1
	Total		1		1
1064696	KETH-TV			1	1
	KFTH-DT			1	1
	KLTJ			1	1
	KPXB-TV			1	1
	KTMD		1		1
	KUBE-TV		1		1
	KUGB-CD			1	1
	Total		2	5	2 5
1064715	KPXE-TV			1	1
	KTAJ-TV			1	1
	Total			2	2
1065031	KTFF-DT		1		1
	Total		1		1
1065157	KFPH-CD	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1065157	KNXV-TV	1			1
	KTVW-DT	1			1
	Total	3			3
1065251	WDVZ-CD		1		1
	WVUA-CD		1		1
	Total		2		2
1065310	WICZ-TV		1		1
	Total		1		1
1065749	KWBM		1		1
	Total		1		1
1066059	WTLF		1		1
	Total		1		1
1066073	WAOW		1		1
	WHRM-TV			1	1
	WSAW-TV		1		1
	Total		2	1	2 1
1200186	WBMM			1	1
	Total			1	1
1201051	KDOR-TV	1			1
	Total	1			1
1201368	KQDK-CD			1	1
	Total			1	1
1202400	KSCE		1		1

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1202400	KTDO		1		1
	KTFN		1		1
	KTSM-TV			1	1
	KVIA-TV		1		1
	Total		4	1	4
1203302	KGCT-CD	1			1
	Total	1			1
1203414	WTMO-CD			1	1
	Total			1	1
1203429	KSNV		1		1
	KVCW		1		1
	Total		2		2
1203562	WAGV		1		1
	Total		1		1
1203847	KQDS-TV		1		1
	Total		1		1
1204036	KDMD	1			1
	KYES-TV	1			1
	Total	2			2
1204044	DKLHU-CD			1	1
	Total			1	1
1204059	KGW			1	1
	KKEI-CD			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1204059	KOPB-TV			1	1
	KORK-CD			1	1
	KORS-CD			1	1
	KOXI-CD			1	1
	KOXO-CD			1	1
	KPXG-TV		1		1
	Total		1	7	17
1204194	KRCB		1		1
	Total		1		1
1204250	KHPX-CD		1		1
	KHPZ-CD		1		1
	Total		2		2
1204586	KPPX-TV		1		1
	KTAZ		1		1
	Total		2		2
1204889	WAFF	1			1
	Total	1			1
1205149	KFTL-CD			1	1
	KKPX-TV			1	1
	Total			2	2
1205220	WBKI-TV	1			1
	Total	1			1
1205225	KFFX-TV	1			1

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1205225	Total	1			1
1205267	WEDW		1		1
	Total		1		1
1205322	WPFO	1			1
	Total	1			1
1205368	WRLM			1	1
	Total			1	1
1206253	WIRE-CD			1	1
	WYGA-CD			1	1
	Total			2	2
1206410	WSPA-TV		1		1
	Total		1		1
1206509	KNOV-CD	1			1
	Total	1			1
1206712	KTTW	1			1
	KWSD		1		1
	Total	1	1		1
1206838	WOBC-CD		1		1
	Total		1		1
1206848	WGCB-TV			1	1
	Total			1	1
1206917	WAGA-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1206963	K27LF-D	1			1
	Total	1			1
1206978	WUTH-CD	1			1
	Total	1			1
1207367	KATU			1	1
	KNMT			1	1
	KOIN			1	1
	KRCW-TV			1	1
	Total			4	4
1208358	WSFJ-TV	1			1
	Total	1			1
1208921	WHTV		1		1
	Total		1		1
1208980	WVTX-CD	1			1
	Total	1			1
1209257	KFAM-CD			1	1
	Total			1	1
1209376	WWJX	1			1
	Total	1			1
1209534	WAWD		1		1
	Total		1		1
1209884	KAID		1		1
	KBOI-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1209884	KIVI-TV			1	1
	Total		2	1	2
1209887	KCWX		1		1
	Total		1		1
1209945	WIFR		1		1
	Total		1		1
1210049	WIYC	1			1
	Total	1			1
1210156	KWWT	1			1
	Total	1			1
1210345	W40CN-D		1		1
	Total		1		1
1210439	WVER			1	1
	Total			1	1
1210491	WDBD		1		1
	WLBT		1		1
	WLOO		1		1
	Total		3		3
1210735	WBIH	1			1
	Total	1			1
1210882	WBQP-CD		1		1
	Total		1		1
1211242	WEDU			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1211242	WFTT-DT			1	1
	WUSF-TV			1	1
	WXAX-CD			1	1
	Total			4	4
1211245	KUQI			1	1
	Total			1	1
1211506	KAJB			1	1
	KVYE			1	1
	Total			2	2
1211597	WVTT-CD	1			1
	Total	1			1
1211599	KRZG-CD		1		1
	Total		1		1
1211744	KSMO-TV			1	1
	Total			1	1
1211898	KRPV-DT	1			1
	Total	1			1
1211904	WIMN-CD	1			1
	Total	1			1
1212122	WRCB			1	1
	Total			1	1
1212124	WACX			1	1
	WHLV-TV			1	1

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1212124	WKCF			1	1
	WOTF-DT			1	1
	WTGL			1	1
	Total			5	5
1212516	WEAR-TV			1	1
	WFGX			1	1
	WHBR			1	1
	Total			3	3
1212621	WBEK-CD	1			1
	Total	1			1
1212684	KUEW		1		1
	Total		1		1
1212752	KXVA		1		1
	Total		1		1
1212959	KUPB	1			1
	Total	1			1
1213076	WRXY-TV			1	1
	WXCW			1	1
	Total			2	2
1213179	KYVE		1		1
	Total		1		1
1213480	KUAT-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1213483	KPBS			1	1
	Total			1	1
1213659	KTVB		1		1
	Total		1		1
1213941	KBEH		1		1
	KHTV-CD		1		1
	KILM		1		1
	KRCA		1		1
	KSCI		1		1
	KVEA		1		1
	KWHY-TV		1		1
	Total		7		7
1214327	KVDF-CD			1	1
	Total			1	1
1214939	WFTV		1		1
	WRDQ		1		1
	Total		2		2
1215158	KDJT-CD			1	1
	KQET			1	1
	KSBW		1		1
	KSMS-TV			1	1
	Total		1	3	4
1215312	KPBT-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1215312	Total		1		1
1215589	KRBC-TV			1	1
	KTAB-TV			1	1
	Total			2	2
1215843	WBUI		1		1
	Total		1		1
1217036	KDCU-DT			1	1
	KGPT-CD		1		1
	Total		1	1	1 1
1217309	WPBA		1		1
	Total		1		1
1218023	KAAH-TV	1			1
	KALO	1			1
	KHLU-CD	1			1
	Total	3			3
1218040	KPTF-DT	1			1
	Total	1			1
1218044	KORO		1		1
	KZTV		1		1
	Total		2		2
1218277	KHRR	1			1
	Total	1			1
1218324	KSPR		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1218324	KYTV		1		1
	Total		2		2
1218752	KVAW	1			1
	Total	1			1
1219139	WWRS-TV		1		1
	Total		1		1
1219321	WLFB		1		1
	Total		1		1
1219741	KNSO		1		1
	KSEE		1		1
	Total		2		2
1220006	WVLR		1		1
	Total		1		1
1220033	WPTV-TV			1	1
	WPXP-TV			1	1
	Total			2	2
1220144	WBXN-CD			1	1
	WWL-TV			1	1
	Total			2	2
1220350	WSVI			1	1
	Total			1	1
1220472	KDFX-CD	1			1
	KESQ-TV	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1220472	Total	2			2
1221073	KDOC-TV			1	1
	KJLA			1	1
	KOCE-TV			1	1
	KXLA			1	1
	Total			4	4
1221626	WSEE-TV			1	1
	Total			1	1
1221865	WSEC			1	1
	Total			1	1
1222106	KRGV-TV		1		1
	KVEO-TV		1		1
	Total		2		2
1222627	KGCW		1		1
	Total		1		1
1222895	WKOP-TV			1	1
	WVLT-TV		1		1
	Total		1	1	1 1
1222924	WBDT			1	1
	WRGT-TV			1	1
	Total			2	2
1222944	WBII-CD		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1223132	WANN-CD			1	1
	WATL			1	1
	WGCL-TV			1	1
	WHSG-TV			1	1
	WPCH-TV			1	1
	WUPA			1	1
	WUVG-DT			1	1
	Total			7	7
1224036	WCWF			1	1
	WFRV-TV		1		1
	Total		1	1	1 1
1224078	WNAB			1	1
	WUXP-TV			1	1
	WZTV			1	1
	Total			3	3
1224088	KAEF-TV		1		1
	KBVU		1		1
	KEET		1		1
	KVIQ		1		1
	Total		4		4
1224099	KQCK	1			1
	Total	1			1
1224225	WAMI-DT			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1224225	WBEC-TV			1	1
	WDLP-CD			1	1
	WIMP-CD			1	1
	WPXM-TV			1	1
	WSBS-CD			1	1
	WSCV			1	1
	Total			7	7
1224298	WGPT		1		1
	Total		1		1
1225054	KECY-TV		1		1
	Total		1		1
1225205	KASA-TV	1			1
	KASY-TV	1			1
	KNME-TV		1		1
	Total	2	1		2
1225246	KENW		1		1
	Total		1		1
1225306	WCYB-TV		1		1
	WEMT		1		1
	Total		2		2
1225462	WJTS-CD		1		1
	Total		1		1
1225569	WMPT			1	1

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1225569	Total			1	1
1225570	WMPB			1	1
	Total			1	1
1225582	KLJB			1	1
	KQIN			1	1
	KWQC-TV			1	1
	WMWC-TV			1	1
	WQAD-TV			1	1
	WQPT-TV			1	1
	Total			6	6
1225622	WUWT-CD	1			1
	Total	1			1
1225713	KOTA-TV		1		1
	Total		1		1
1225781	WMEB-TV		1		1
	Total		1		1
1226015	KZJO			1	1
	Total			1	1
1226360	WJAC-TV		1		1
	Total		1		1
1226610	KENS			1	1
	WOAI-TV		1		1
	Total		1	1	1 1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1226644	W21CK-D			1	1
	Total			1	1
1226663	WABM			1	1
	WBIQ		1		1
	WBXA-CD			1	1
	WIAT		1		1
	WTTO			1	1
	Total		2	3	2 3
1226764	WRDM-CD			1	1
	Total			1	1
1227695	KBRR		1		1
	KCGE-DT		1		1
	KGFE		1		1
	Total		3		3
1227719	WTLH			1	1
	WTWC-TV			1	1
	Total			2	2
1227743	WLJC-TV		1		1
	Total		1		1
1227819	WLFT-CD		1		1
	Total		1		1
1228187	KHCE-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1228608	WUHF		1		1
	Total		1		1
1229622	WCMU-TV		1		1
	Total		1		1
1229759	KFSM-TV		1		1
	Total		1		1
1230057	WAVE		1		1
	WLKY		1		1
	Total		2		2
1231034	WDPX-TV			1	1
	Total			1	1
1231157	WNIN		1		1
	Total		1		1
1231316	KBCA		1		1
	Total		1		1
1231524	KJWP			1	1
	WCAU			1	1
	WFPA-CD			1	1
	WGTW-TV			1	1
	WPHA-CD			1	1
	WPPX-TV			1	1
	WPSG			1	1
	WTVE			1	1

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1231524	WUVP-DT			1	1
	WYBE			1	1
	Total			10	10
1231615	WDIQ		1		1
	Total		1		1
1231697	WBBH-TV		1		1
	WZVN-TV		1		1
	Total		2		2
1231728	WCWN			1	1
	WMHT			1	1
	WNYT			1	1
	WRGB			1	1
	WTEN			1	1
	WXXA-TV			1	1
	Total			6	6
1231838	WQTO		1		1
	Total		1		1
1232157	KFTR-DT		1		1
	KMEX-DT		1		1
	Total		2		2
1233154	WCNY-TV		1		1
	WSTM-TV		1		1
	Total		2		2

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1233572	WPSU-TV		2		2
	Total		2		2
1233693	KOSA-TV		1		1
	Total		1		1
1233975	WNPX-TV		1		1
	WPGD-TV			1	1
	Total		1	1	1 1
1234009	WZZM		1		1
	Total		1		1
1234025	WOWK-TV		1		1
	WQCW		1		1
	Total		2		2
1234252	WUNK-TV			1	1
	Total			1	1
1234294	KVMY		1		1
	Total		1		1
1234527	KIPT			1	1
	Total			1	1
1234587	KMCI-TV			1	1
	KSHB-TV			1	1
	Total			2	2
1234684	WTIU			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1234699	KRII		1		1
	Total		1		1
1234758	KEYE-TV		1		1
	KLRU		1		1
	KVUE		1		1
	Total		3		3
1234946	KUTF	1			1
	Total	1			1
1235008	WDCQ-TV			1	1
	Total			1	1
1235223	WFOX-TV			1	1
	WJAX-TV			1	1
	WJCT			1	1
	Total			3	3
1235360	WTVC			1	1
	Total			1	1
1235627	K17ED-D	1			1
	Total	1			1
1235966	KKCO		1		1
	Total		1		1
1236063	KTVL			1	1
	Total			1	1
1236080	KHBS	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1236080	Total	1			1
1236324	KHBC-TV	1			1
	Total	1			1
1236573	WFSU-TV	1			1
	Total	1			1
1236585	KIPT		1		1
	Total		1		1
1236861	WOLP-CD		1		1
	WOOD-TV		1		1
	Total		2		2
1236889	KZMM-CD	1			1
	Total	1			1
1236974	WSKG-TV		1		1
	Total		1		1
1237074	WHPX-TV		1		1
	Total		1		1
1237284	WIPM-TV		1		1
	WJWN-TV		1		1
	Total		2		2
1237678	WNIT		1		1
	Total		1		1
1237796	KSVN-CD		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1237865	KGHB-CD			1	1
	Total			1	1
1237867	WTOV-TV			1	1
	Total			1	1
1238064	KDUH-TV			1	1
	Total			1	1
1238430	KNWA-TV		1		1
	Total		1		1
1238568	WZMQ	1			1
	Total	1			1
1238711	KAVU-TV		1		1
	Total		1		1
1238745	WJLP			1	1
	WNYE-TV			1	1
	Total			2	2
1238964	WFPT		1		1
	Total		1		1
1239800	WTAP-TV			1	1
	Total			1	1
1239956	KPIF	1			1
	Total	1			1
1240955	WDKY-TV		1		1
	Total		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1241143	WCHS-TV		1		1
	WVAH-TV		1		1
	Total		2		2
1241302	WSMH		1		1
	Total		1		1
1241592	KWBJ-CD	1			1
	Total	1			1
1241784	WBUW		1		1
	WMTV		1		1
	Total		2		2
1242292	WFBD	1			1
	Total	1			1
1242355	WGFL			1	1
	WNBW-DT			1	1
	Total			2	2
1242492	WSTE-DT		1		1
	Total		1		1
1242684	KWAB-TV			1	1
	Total			1	1
1242828	KETV			1	1
	Total			1	1
1243031	WIPB			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1243302	WVIR-TV		1		1
	Total		1		1
1243417	WLGA			1	1
	WRBL		1		1
	WTVM	1			1
	Total	1	1	1	1
1243489	WETP-TV	1			1
	Total	1			1
1243691	KFNR	1			1
	Total	1			1
1243774	WCAY-CD			1	1
	Total			1	1
1244135	WTJX-TV			1	1
	Total			1	1
1244456	WDFX-TV		1		1
	Total		1		1
1244880	KHPM-CD	1			1
	Total	1			1
1244913	KSNW			1	1
	Total			1	1
1245311	KNIC-DT			1	1
	Total			1	1
1245858	WEIU-TV		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1245858	Total		1		1
1246091	KMDE			1	1
	Total			1	1
1246428	KXNW		1		1
	Total		1		1
1246849	KRWG-TV			1	1
	Total			1	1
1246943	WBSF			1	1
	Total			1	1
1247688	KGUN-TV		1		1
	Total		1		1
1247705	KOB		1		1
	Total		1		1
1247774	WPXC-TV			1	1
	Total			1	1
1248120	KPVI-DT		1		1
	Total		1		1
1248244	KJTV-CD			1	1
	KJTV-TV			1	1
	KLCW-TV			1	1
	KXTQ-CD			1	1
	Total			4	4
1249321	WTWV	1			1

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1249321	Total	1			1
1250734	WRBJ-TV		1		1
	Total		1		1
1250854	KBGS-TV		1		1
	KTVQ	1			1
	Total	1	1		1
1250909	WENY-TV			1	1
	WSKA		1		1
	WYDC		1		1
	Total		2	1	2
1251069	WGHP			1	1
	Total			1	1
1251399	KWKS			1	1
	Total			1	1
1251758	KVOS-TV			1	1
	Total			1	1
1251823	KDCG-CD		1		1
	KLWB		1		1
	Total		2		2
1252039	WIWU-CD		1		1
	Total		1		1
1252202	WSKY-TV			1	1
	Total			1	1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1252424	KLDO-TV	1			1
	Total	1			1
1253064	WDTI			1	1
	WHMB-TV			1	1
	Total			2	2
1253407	WOMS-CD		1		1
	Total		1		1
1253490	KTUZ-TV			1	1
	Total			1	1
1253623	WFXI			1	1
	Total			1	1
1253749	KIMT			1	1
	KYIN			1	1
	Total			2	2
1253947	KTIN			1	1
	Total			1	1
1254053	WVVA			1	1
	Total			1	1
1254146	KDEN-TV			1	1
	KPJR-TV			1	1
	KPXC-TV			1	1
	Total			3	3
1254286	WTVE		1		1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1254286	Total		1		1
1254898	KATC		1		1
	Total		1		1
1255221	WALB			1	1
	WFXL			1	1
	Total			2	2
1255743	WYBU-CD		1		1
	Total		1		1
1256620	KILM			1	1
	Total			1	1
1256782	KGTF			1	1
	Total			1	1
1256984	WMBF-TV			1	1
	Total			1	1
1257453	KVSN-DT			1	1
	Total			1	1
1258123	KHSL-TV	1			1
	Total	1			1
1258286	KDHW-CD		1		1
	Total		1		1
1258802	KCDO-TV			1	1
	Total			1	1
1261487	WVAN-TV		1		1

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1261487	Total		1		1
1262187	WPLG			1	1
	WSVN			1	1
	Total			2	2
1263739	KATV			1	1
	Total			1	1
1263786	KVEW			1	1
	Total			1	1
1263846	DWDHS			1	1
	Total			1	1
1264222	K36EW-D		1		1
	Total		1		1
1264312	WLAX			1	1
	Total			1	1
1265362	WKAR-TV			1	1
	Total			1	1
1265403	WKYC			1	1
	Total			1	1
1265698	KRBK			1	1
	Total			1	1
1265710	WGGN-TV			1	1
	Total			1	1
1266878	WNEP-TV			1	1

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1266878	Total			1	1
1267265	KBTW-TV			1	1
	Total			1	1
1267696	KJUN-CD			1	1
	Total			1	1
1268297	WMBQ-CD	1			1
	WMUN-CD	1			1
	Total	2			2
1268738	WLHG-CD			1	1
	Total			1	1
1268967	K31KL-D	1			1
	Total	1			1
1274349	WCML		1		1
	Total		1		1
1275765	WUNW	1			1
	Total	1			1
1276951	WELF-TV			1	1
	Total			1	1
1277286	KUTU-CD	1			1
	Total	1			1
1278232	KRAH-CD	1			1
	Total	1			1
1279395	WPVN-CD	1			1

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Aloc Asrn	Callsign	Other	Rev. F	Rev. G	Grand Total
1279395	Total	1			1
1286616	KPLO-TV			1	1
	Total			1	1
Grand Total		444	955	834	955 834 444

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